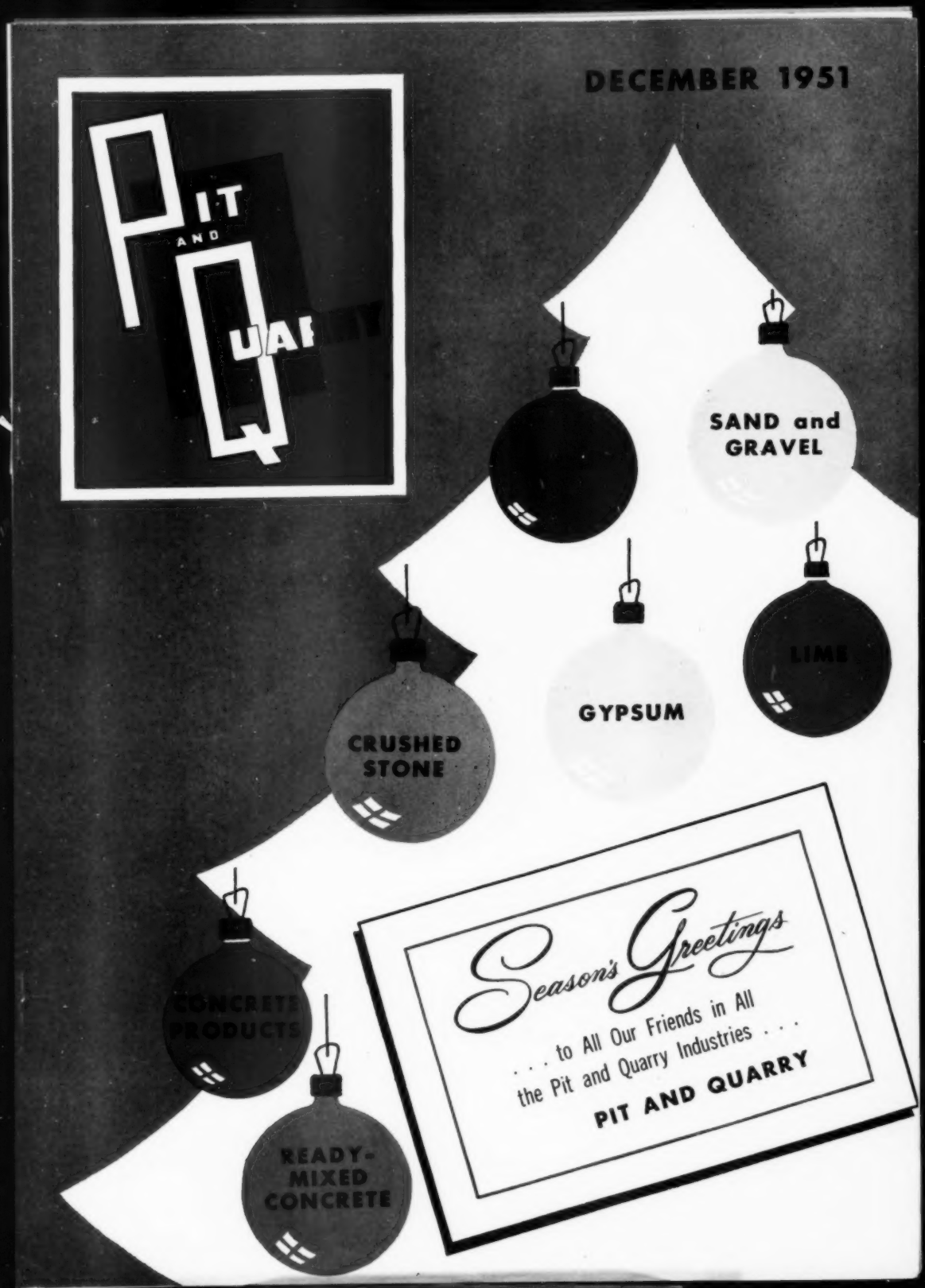
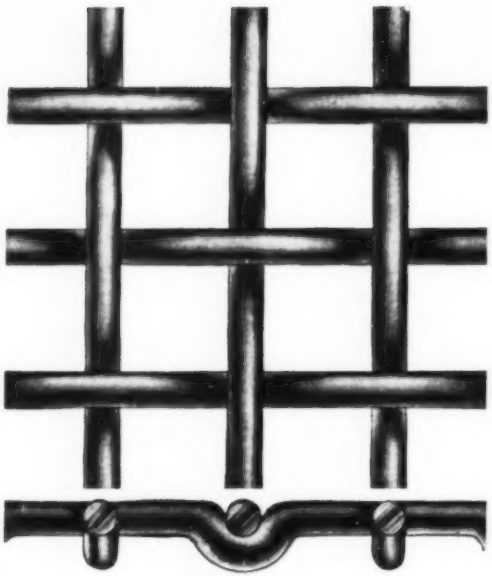
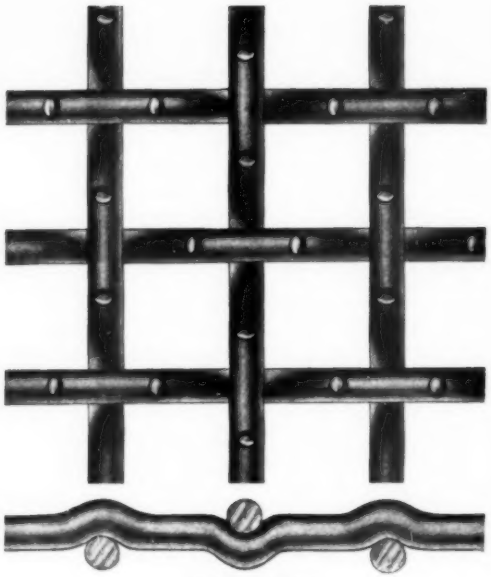

DECEMBER 1951
PIT AND QUARRY
SAND and GRAVEL
LIME
GYPSUM
CRUSHED STONE
CONCRETE PRODUCTS
READY-MIXED CONCRETE
Season's Greetings
. . . to All Our Friends in All the Pit and Quarry Industries . . .
PIT AND QUARRY



STA-SMOOTH



ARCH-CRIMP

SUPER-LOY VIBRATING-SCREEN SECTIONS

SUPER-HARD - - - SUPER-TOUGH - - - SUPER-STRONG

SUPER-LOY SCREENS are made from a high carbon steel specially alloyed to withstand abrasion longer — endure vibration better — resist fatigue to the utmost

ORDER LUDLOW-SAYLOR HOOK-STRIPS FOR ALL TENSIONED VIBRATING-SCREEN SECTIONS.

THE LUDLOW-SAYLOR WIRE COMPANY

634 S. Newstead Ave. ST. LOUIS 10, MO.

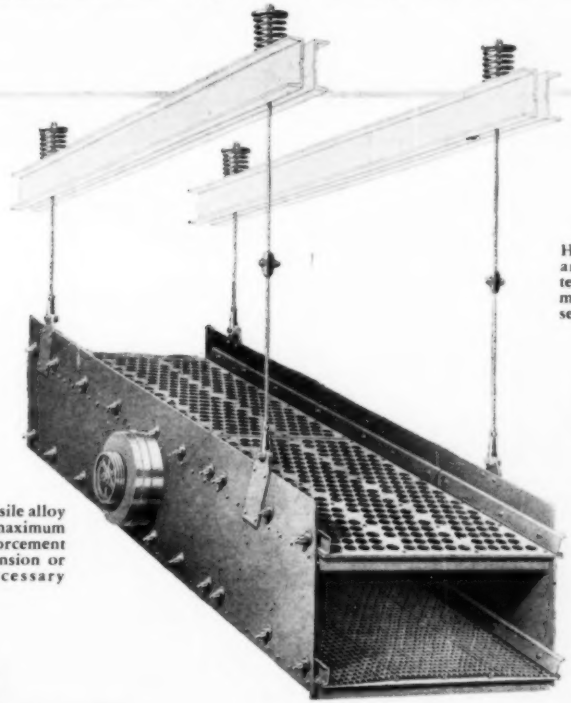
For accurate sizing...
For thorough rinsing...
For rapid dewatering...

the BETTER WAY is with CA

Concentric Action Vibrating Screens

No matter what your screening requirements — Link-Belt CA Vibrating Screens offer top efficiency. Self-aligning vibrator mechanism imparts a smooth, positive, circular motion to every square inch of every deck. Lively tumbling action gives each particle maximum opportunity for sizing, washing or drainage.

There's a standard size CA for almost every job — 3 x 8 to 6 x 16 ft. . . . single, double and triple deck . . . suspension or support mounted. Remember, when it comes to materials handling, profit-wise operators come to Link-Belt.



Two-bearing vibrator has constant bearing loads — no shock from impact of feed.

Unbalanced weights easily adjusted to amplitude of highest efficiency.

Screen box of high tensile alloy steel plate provides maximum strength. Solid reinforcement at vibrator and suspension or support insures necessary rigidity.

Husky roller bearings are completely protected from dust and moisture by labyrinth seals, steel housing.

Centrifugally-actuated, unbalanced weights eliminate excessive vibration in accelerating and decelerating.

Screen cloth is securely tensioned and clamped over rubber supports, can be quickly changed.

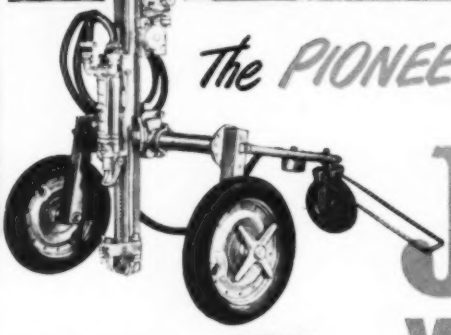
WRITE FOR BOOK 2354 for complete layout data

LINK-BELT

VIBRATING SCREENS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa.) Offices in Principal cities. 12.425

PIT AND QUARRY, December, 1951, Vol. 44, No. 6. Published monthly by the Complete Service Publishing Company, 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $8 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.



The PIONEER and still the LEADER!

JOY LIGHTWEIGHT WAGON DRILL

Introduced by **JOY**
8 years ago—hundreds
in use, nation-wide . . .

HERE'S WHY:

- MORE HOLE PER SHIFT with the *exclusive* "drill and blow" feature.
- REALLY LIGHTWEIGHT—only 750 lbs.—less than half the weight of conventional wagon drills.
- Easily operated by ONE MAN; mounts JOY 3" or 3½" drifters, or 55 or 65 lb. sinkers.
- POSITIVE LOCKING BRAKES—requires no spikes.

WRITE FOR BULLETIN

W&D C 2073

Consult a Joy Engineer

JOY MANUFACTURING COMPANY
GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.
IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

What Goodyear is doing about the Highway Crisis

—in the public interest—and yours!

In behalf of the modern highway system that this country needs so desperately, Goodyear is running two-page, full-color advertisements like these in the Saturday Evening Post and Collier's—

How did we get into this fix?
Must America be strangled by a String of Concrete?
GOODYEAR
THE GREATEST NAME IN RUBBER
GOODYEAR
THE GREATEST NAME IN RUBBER

Another reason why it pays always to BUY and SPECIFY

GOODYEAR

THE GREATEST NAME IN RUBBER

This Department Is Never Busy

...but SECO VIBRATING SCREENS ARE

Long Life Performance Means Profitable Screening for SECO Users

If you have Seco vibrating screens on your job . . . it's good to know that you can get quick service on any parts replacements you may ever require. That's part of Seco's service policy . . . another of the reasons why you put your confidence in the Seco organization.

BUT HERE'S SOMETHING MORE IMPORTANT!

Seco vibrating screens *are built to endure.* The smooth, balanced performance of patented Seco vibrating screens pays off in long life . . . and a holiday from excessive maintenance worries. *It's a proven fact!* Thousands of busy Seco vibrating screens can't keep our parts department busy.

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

WHAT'S AHEAD?

Check your screening requirements now.

PLAY SAFE! REPLACE OR ENLARGE WITH

Performance-Proven
SECO VIBRATING SCREENS
made only by

SCREEN EQUIPMENT CO., INC.
1750 Walden Avenue
Buffalo 25, New York
In Canada: United Steel Corp.
Toronto, Ontario

"and from the best makers, lady!"

These are well made and give dependable service, the sidewalk merchant implies. Was there ever an eager salesman who didn't!

To the men who order more than 85 per cent of all Multiwall bags, reliability of manufacturer is one of the most important considerations*.

But it must be a *proved* reliability.

Union reliability has been demonstrated by 76 years of unbroken leadership in paper packaging. Union's mammoth Savannah plant, world's largest integrated pulp-to-container mill, produces Multiwalls by the million.

Capacity and fair treatment are among the many good reasons why, with a free choice of all Multiwall manufacturers, major buyers are specifying UNION Multiwalls to a greater extent than ever before.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

*August, 1951 research study.

UNION BAG & PAPER CORPORATION • WOOLWORTH BUILDING, NEW YORK 7

NOW... More Grinding Time

with this Improved DIAPHRAGM

BIG SAVINGS!
... in man hours.
... down time.
... replacement parts.

★ You get longer wear and lower milling cost . . . because grate ribbing has been increased.

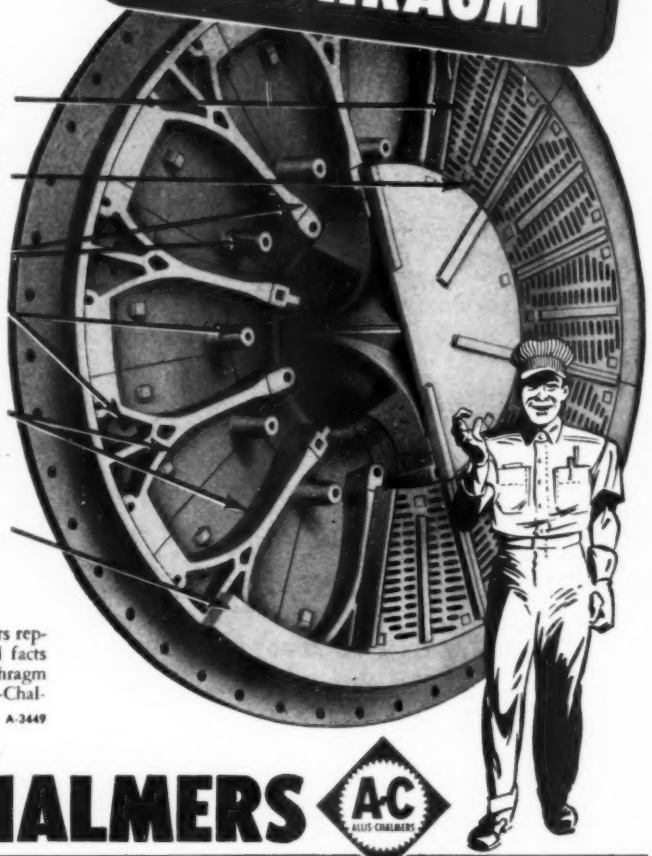
★ Long-life grate sections are of wear-resisting CC-alloy or Chrome-Moly steel.

★ Negligible breakage — grate section support has been strengthened.

★ Added bolt protection — diaphragm bolts heavily shielded against discharging material.

★ Fewer stock parts needed for operating right and left-hand mills. Involute diaphragm rotates in either direction.

★ Easy to remove grate sections . . . *without* disturbing adjacent shell liners! Filler bar height has been made equal to height of shell liners.



Get in touch with the Allis-Chalmers representative in your area for helpful facts on how this new grinding mill diaphragm will fit into your operations. Allis-Chalmers, Milwaukee 1, Wisconsin. A-3449

Pulverator is an Allis-Chalmers trademark.

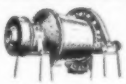
ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverator

Vibrating Screens

Jaw Crushers


Grinding Mills

Gyratory Crushers

Kilns, Coolers, Dryers

Protect high-speed Diesels in quarry service against ring sticking and excessive wear

with

GULFLUBE MOTOR OIL H.D.

High-speed Diesels in dusty quarry service need high quality detergent-dispersant oils, the type depending on the severity of service.

For the majority of engines Gulflube Motor Oil H.D. is recommended. This high quality oil has a rich paraffin base and sufficient detergency to protect Diesel engines under most operating conditions.

For engines in low temperature operation, extra heavy-duty operation or for those using high sulphur fuels, Gulflube Motor Oil X.H.D. or Gulf Super-duty Motor Oil may be the preferred recommendation. They contain larger quantities of detergent and have alkaline properties which prevent corrosion of cylinder walls, and resulting wear under these severe operating conditions.

For additional information leading to better lubrication and maintenance of your Diesel engine, call in a Gulf Lubrication Engineer. Write, wire or phone your nearest Gulf office.

FIFTY YEARS OF SERVICE

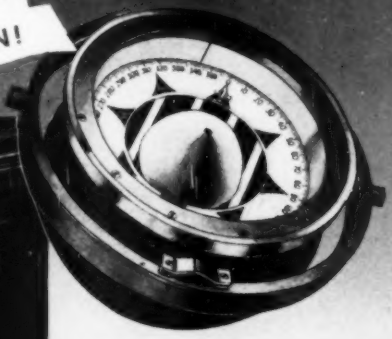
1901 GULF 1951

PETROLEUM AND ITS PRODUCTS

Steel

BULWARK OF FREEDOM, AND . . .

NAVIGATOR OF INDUSTRIAL MIGRATION!



BLOOMING THE INGOTS

Steel, like dough for bread, must be kneaded, rolled and worked from ingots weighing several tons down to many shapes and sizes. First in the series of such processes is the giant blooming mill of which Sheffield has installed the most modern type.

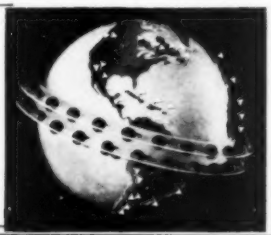
SINCE Colonial times industry has been on the move, migrating from the Northeast—West, Southwest—with iron and steel providing the means and in many cases, the motive.

West of the Mississippi and East of the Rockies, Sheffield Steel and its forebearer have successfully navigated the uncharted course of steel production since 1888. First, and still the only fully integrated steel mill operation in Mid-America, Sheffield continues to devote an ever-expanding production to a wide diversity of the particular kinds of steel products most needed in the industrial growth of the region.

Within the last ten years, the industrial growth of the region has shattered all records. So, too, has Sheffield Steel in expanding some of its facilities as much as 3½ times, and marking up an overall capacity increase, at its three plants, of over 100% as compared to 25% for the steel industry as a whole.

SHEFFIELD
STEEL
CORPORATION
HOUSTON KANSAS CITY
TULSA
SUBSIDIARY OF ARMCO STEEL CORPORATION

SHEFFIELD
MOLY-COP
COPPER-MOLYBDENUM ALLOY
Grinding Balls
USED and PROVED ALL AROUND THE WORLD



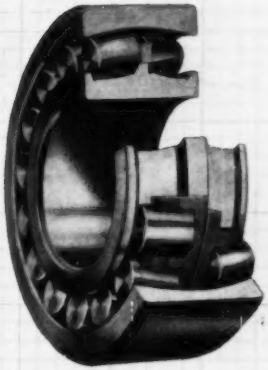
IRON AND STEEL *SCRAP* MEANS . . . . . .

MORE STEEL FOR AMERICA
More Money In Your Pocket!

GET YOURS OFF TO
THE DEFENSE LINES NOW!

more motive power

for Locomotive Cranes...



Engineered for the drive shafts of Locomotive Cranes built by the American Hoist and Derrick Company, Torrington Spherical Roller Bearings promote smooth transmission of power to the trucks... helping the giant cranes to move quickly and easily along the rail.

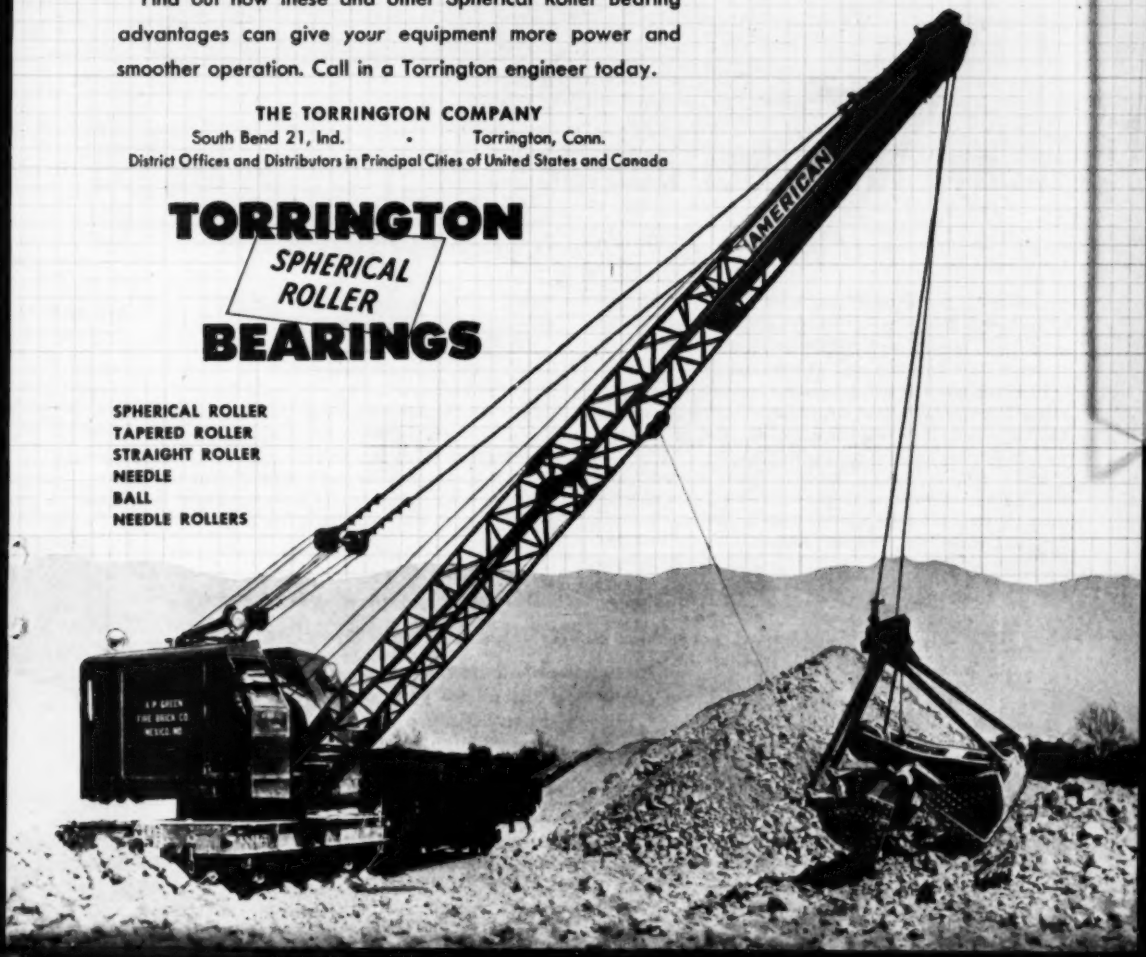
The self-aligning feature of these heavy-duty bearings prevents uneven load distribution, even when shock loads cause shaft deflection. Excessive wear is prevented, long service life assured.

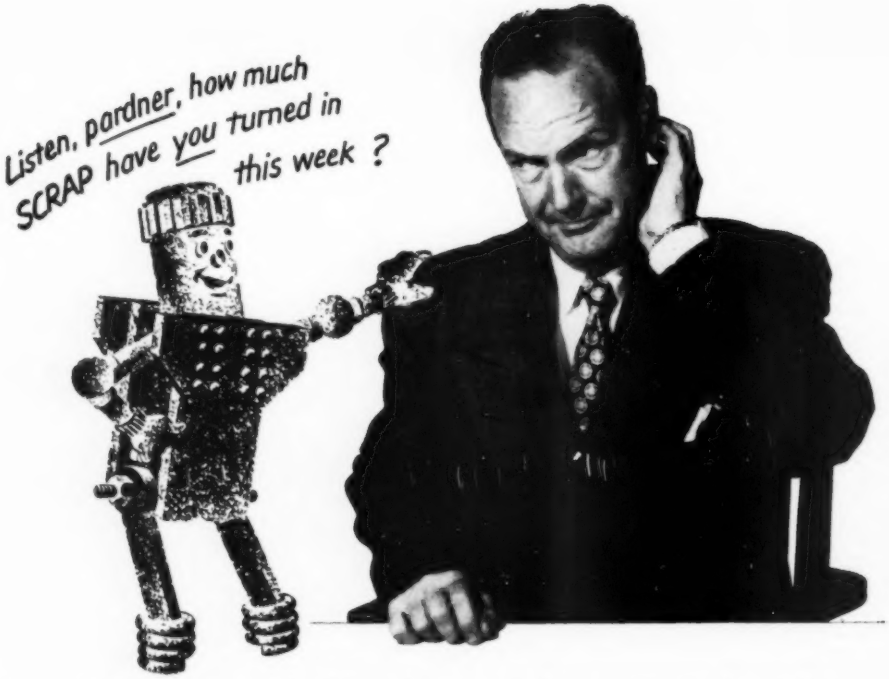
Find out how these and other Spherical Roller Bearing advantages can give *your* equipment more power and smoother operation. Call in a Torrington engineer today.

THE TORRINGTON COMPANY
South Bend 21, Ind. • Torrington, Conn.
District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON
SPHERICAL ROLLER
BEARINGS

SPHERICAL ROLLER
TAPERED ROLLER
STRAIGHT ROLLER
NEEDLE
BALL
NEEDLE ROLLERS





Today, the steel business is your business

—*it needs all your SCRAP, Now!*

SUPPOSE that every steel user were suddenly told that he had to turn in a half-ton of scrap before he could get a ton of steel. It would start the most gosh-almighty treasure hunt for scrap that ever happened.

In effect, this "no-scrap, no-steel" situation virtually exists. For without *all* the scrap that industry can search out and start on its way to the mills, steel production will surely drop. It's as serious as that.

More scrap is urgently needed. Today the mills are turning out more steel than ever before. But they're scraping the bottom of the barrel as far as scrap is concerned. Defense and domestic demands for steel simply cannot be met unless at least 100,000 tons of "purchased" scrap roll into the furnaces—*every day.*

The bulk of this scrap must come from industry. That's why we're asking for your all-out help. That's why it's so important that you make the drive for scrap part of your daily operations. Make it your business to encourage every employee to report any obsolete, broken or worn-out machinery, tool or equipment that has seen its day. From this dormant "junk" must come the heavy melting scrap that the mills need most. Don't let your scrap lie idle; send it on its way. How about it, pardner?

You'll find your local scrap dealers listed in the yellow pages of the phone directory.

This page would ordinarily be used to tell you about

AMERICAN TIGER BRAND WIRE ROPE

but, because without SCRAP we cannot produce steel, we are asking instead for your all-out help in getting more SCRAP to the mills.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

9-1328

UNITED STATES STEEL

Packs a payload dirt cheap!

Boss truck of tough hauling jobs is International.

This has been true for 19 straight years. One reason is – Internationals pack bigger payloads for less money.

You can prove it just by counting the number of Internationals used by people in your business. Their records show International Trucks cost less to own and operate.

Why is this true?

Because International Trucks are available in 115 basic models, thousands of variations – you don't have to buy more truck than you need. And you never get less truck than you need.

What about the driver?

A driver takes better care of a truck he likes. He likes the new Internationals. He likes the Comfo-Vision Cab – "the roomiest on the road." He enjoys new riding comfort, improved visibility, greater ease of handling. He enjoys so many features that make his job easier, it's no wonder he likes International Trucks.

No wonder, either, that he makes them pay off on the job. Teamed with a new International Truck he makes the effort that can keep your hauling costs *dirt cheap.* Why not see your International Truck Dealer or Branch and find out how you can keep your hauling costs down with Internationals.

International Harvester Builds McCormick Farm Equipment and Farmall Tractors... Motor Trucks... Industrial Power... Refrigerators and Freezers

INTERNATIONAL HARVESTER COMPANY • CHICAGO

INTERNATIONAL TRUCKS

"Standard of the Highway"

4000 volt, 3 phase, 60 cycle electric powered Quarrymaster in a trap rock quarry

The I-R QUARRYMASTER speeds blast-hole drilling in any kind of rock

High drilling speed, low bit cost, minimum labor requirements, low service truck charges—these are but a few QUARRYMASTER advantages that give you the lowest possible drilling cost per ton. Fast drilling speeds mean more holes per day permitting closer hole spacing for better fragmentation. The result is increased primary crusher efficiencies and reduced costs on loading and hauling equipment. Compare these features with any other drill rig.

● ● ●

Ask your nearest Ingersoll-Rand representative about this completely self-contained, self-propelled outfit that drills 6-inch holes, has continuous hole cleaning, automatic rotation and is available in either diesel or electric drive. Ingersoll-Rand Company, 11 Broadway, New York 4, N. Y.

- **DRILL ANY KIND OF ROCK**—from the softest limestones and dolomites to the hardest granites.
- **REAL DRILLING SPEED**—drills 25 to 60 feet per hour in limestone and 9 to 15 feet per hour in granite.
- **LOWEST BIT COST**—of any blast hole drilling method. Carset Bit life from 700 to 1600 feet in granite—up to 14000 feet in soft, less abrasive formations.
- **NEEDS NO BLACKSMITH SHOP**—Carset Bits are easily handled and sharpened on the job. No falling off of drilling speeds because of dull bits.
- **REQUIRES NO SPECIALIZED LABOR.**

712-5

Ingersoll-Rand

QUARRYMASTER

315 tons per hour average

JOB STUDY

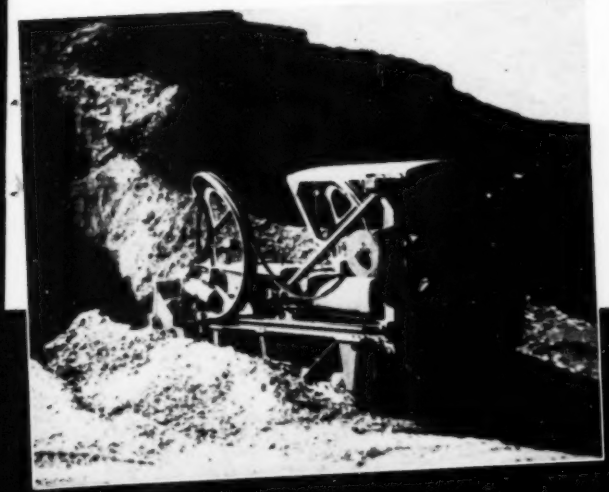
Time—1 hour
Material—compacted gravel and clay sand mixed
Location—Nevada
Actual yardage loaded—212
Total loading time—40 minutes
Lost time and switching—20 min.
Average loading time—61 seconds
Truck rated capacity—5 yards
Weight material—110 lb. cu. ft.
Actual tonnage loaded—315
Haul—1 mile round trip
Trucks—6 working

Loading compacted clay, sand and gravel

A recent case study of loading sand and gravel compacted with clay, with no preliminary shooting, shows the average loading speed of the Eimco 104 RockerShovel to be equal to that of much larger, more expensive equipment.

This operator maintained the average for 27 hours in order to fulfill his contract with the Railroad.

Speed, dependability and flexibility are the advantages of Eimco loading equipment. Write for more information on jobs similar to your own.



You cant beat an Eimco

EIMCO

A350

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH, U. S. A.

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IN FRANCE: SOCIETE EIMCO, PARIS, FRANCE
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AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

PRODUCTION

CONTROLLED IMPACT ACTION IN WISCONSIN. Portable 3240 Impact Master with 36" x 12' apron feeder, 30" delivery conveyor, Murphy ME6 Diesel. Feeds output to 5' x 14' 3-deck vibrating screen, oversize returns to breaker. Average production 150 tph 2½" minus high quality cubical aggregate.

CONTROLLED IMPACT ACTION IN IOWA. In a free running operation this stationary closed circuit setup averages 28% of 1½" minus plus ¾", 38% of ¾" minus plus #4, and 34% aglime. Percentage of sizes can be changed easily to meet market demands. As high as 180 tph of 1½" minus have been recorded. 135 h.p. electric power.

CONTROLLED IMPACT ACTION IN ILLINOIS. With rotors turning at 900 rpm with GM 6031-C, this 3240 Impact Master is turning out profitable quantities of ¾" minus, and aglime. More than 50% aglime production has been noted.

CONTROLLED IMPACT ACTION IN TEXAS. A high production scrap with a minimum plant investment. This portable 3240 Impact Master is equipped with 32' portable apron feeder and GM 6-110 power unit. Capacity of 200 tph of 2" minus.

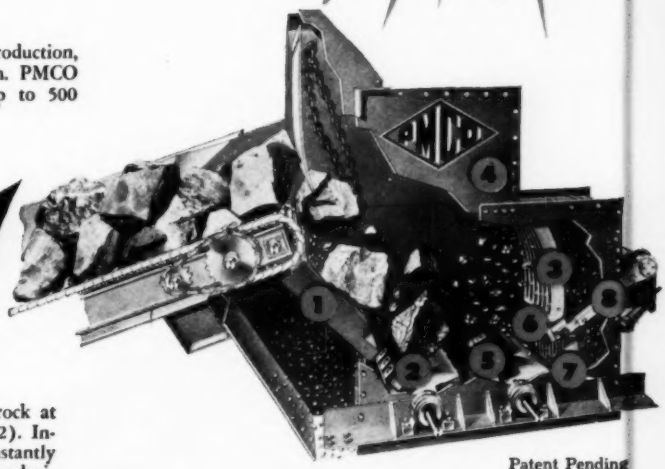
PLUS WITH CONTROLLED IMPACT ACTION

Exclusive operating principle of PMCO Impact Master delivers extra profit-making advantages

- Top capacity
- High ratio of reduction eliminates secondary crushers and auxiliary equipment. Provides a complete high output plant with minimum investment.
- 100% of the breaking is accomplished by rigidly mounted rotor hammers producing a better quality cubical aggregate.
- Better control over finished product size with simple mechanical adjustments changing the percentage of sizes.
- Less h.p. per ton of finished material.

Controlled Impact Action adds up to faster production, better production, more profitable production. PMCO Impact Masters are made with capacities up to 500 tph. Write for complete details.

HERE'S HOW IT WORKS



Patent Pending

Adjustable feed plate (1) guides in-coming rock at proper angle into first rotor hammer circle (2). In-fed rock is intercepted in motion, exploded instantly by the terrific impact of the rotor hammers and simultaneously projected toward vertical screen grate (3) where finished sizes are immediately discharged.

Oversize particles are deflected upwards, intercepted by feed chute back plate (4) and guided downward into the path of the second rotor hammer circle (5) where they are exploded and projected toward the bottom half of the vertical screen grate and the lower screen grate (7) for immediate discharge.

Both rotor hammers rotate in the same direction toward the rear, promoting fast feeding and keeping all material flowing toward the discharge for top capacity.

Finished product sizes are controlled by the speed of the rotor hammers, and by simple adjustments (8) of stripper bar (6) and lower screen grate.

By controlling the in-fed rock and directing its flow, practically 100% of the breaking is accomplished by the rotor hammers. There is no attrition, no abrasive or grinding action. This reduces wear and makes possible a more uniform gradation cubical aggregate.

PETTIBONE MULLIKEN CORPORATION

4700 West Division Street, Chicago 51, Illinois Phone SPaulding 2-9300

Cut Cooling Costs

these 3 Ways

1. CUTS ROTARY KILN FUEL COSTS

Air-Quenching grate cooler actually returns 75% of sensible heat in clinker back to kiln as secondary combustion air. Clinker is cooled quickly, to a temperature where handling is no problem, by means of cooling air coming up through the relatively thin bed of hot material on grate.

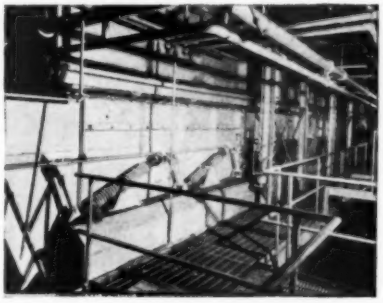
2. CUTS CLINKER GRINDING COSTS

Air-quenched clinker is easier to grind — capacities of clinker grinding mills handling hard-to-grind clinker have been increased as much as 10% with the installation of an air-quenching grate cooler. Rapid cooling also helps nullify the detrimental effects of magnesia in clinker.

3. CUTS MAINTENANCE COSTS

Reciprocating motion of grate is carried on flexible rubber bushings and springs. No wearing parts and no slippage. Clinker does not slide on grate, it hops, gently and steadily. Lubrication is negligible, only four grease fittings on entire cooler. Maintenance cost runs as low as 1/10 cent per barrel.

COOLS 100 BARRELS AN HOUR FROM 2500° TO 90° F.
In the modern plant of Dewey Portland Cement Co., Davenport, Iowa, this 4½ x 70 ft Allis-Chalmers air-quenching grate cooler cools 100 barrels of cement clinker per hour from 2500° F. to approximately 90° F. It's one of three Allis-Chalmers grate coolers installed here.



Save on Installation Cost, Too!

The air-quenching grate cooler comes as a complete unit, fits into existing plants readily because it operates horizontally. Installation costs are 10 to 30 percent less than the cost of installing any other type of cooler! Get more facts from the Allis-Chalmers representative in your area, or write for Rotary Kiln Bulletin 07B6368A. Allis-Chalmers, Milwaukee 1, Wisconsin.

Pulverator is an Allis-Chalmers trademark.

ALLIS-CHALMERS

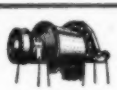
A-3391

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverators

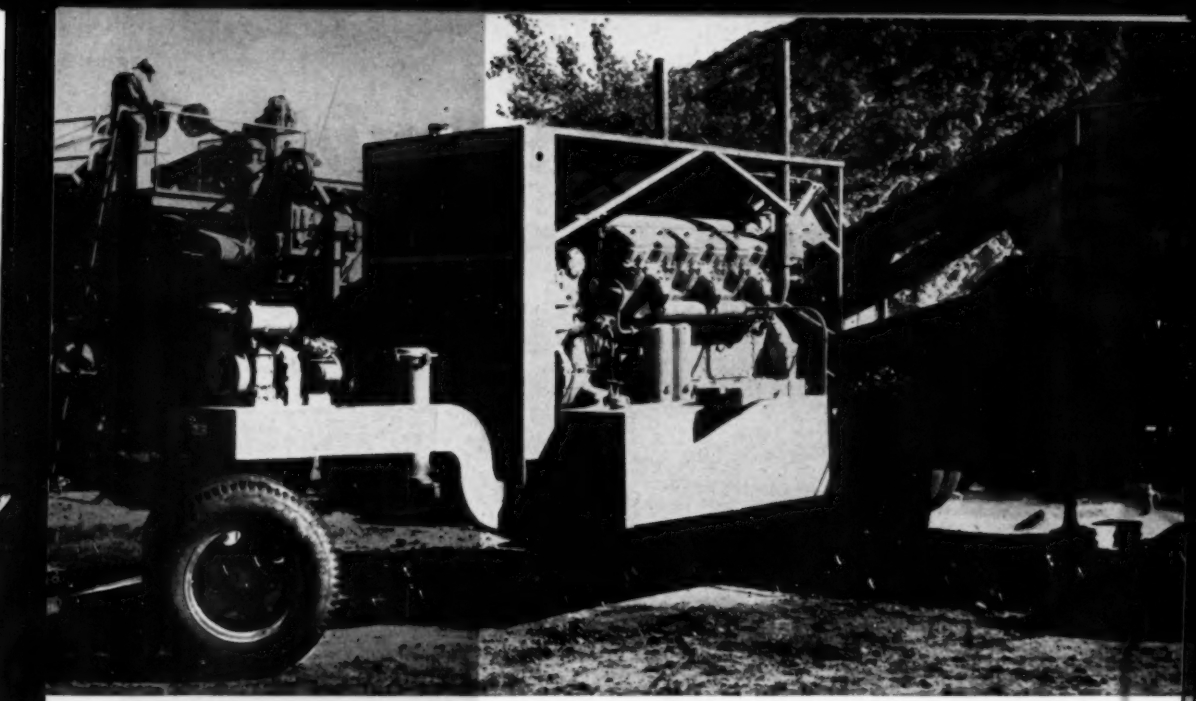
Vibrating Screens

Jaw Crushers


Grinding Mills

Gyratory Crushers

Kilns, Coolers, Dryers



YOU CAN TAKE IT WITH YOU!

HERE'S part of a portable crushing plant operated by Schildberg Construction Co., Greenfield, Iowa. That engine is a D386 "Caterpillar" Diesel, conservatively rated at 400 HP. It powers the primary crusher and hammer mill, while a D4600 drives the screens and conveyor and a D8800 drives the jaw crusher. The plant averages 1,200 tons of crushed rock per day for county secondary roads, as well as limestone dust for agricultural purposes. D. H. Schildberg says: "We have other 'Cat' units on our other job. Since we've seen their trouble-free operation, we specify 'Cat' Diesel power on all of our replacement engines. We get good, dependable service from our dealer."

Standardizing on "Caterpillar" power units is a good move whether you've got a stationary or portable plant. They're ruggedly built to deliver reliable performance at a minimum cost for fuel, repair and maintenance. And field records on the dustiest, toughest jobs *prove* it. What's more, your "Caterpillar" dealer is on duty to provide on-the-job service 24 hours a day!

"Cat" Diesel Engines are built in ten sizes up to 500 HP. The power they promise is the power they deliver. The importance of these engines for both military needs and maintaining the civilian economy is increased by the present situation. Talk over your engine requirements with your "Caterpillar" dealer. He has the complete stock of parts to keep your present equipment in running order and will do his utmost to make prompt delivery of new machines.

CATERPILLAR, PEORIA, ILLINOIS

LOOK UNDER THE HIDE

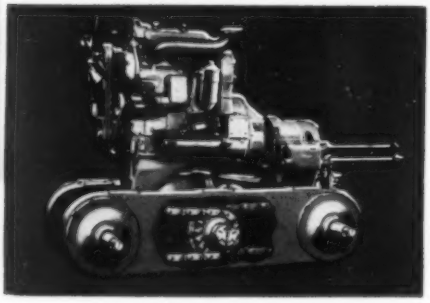
Connecting rods for "Caterpillar" Diesels are made of medium carbon steel, drop forged and heat treated. Of "H" section design, they are rifle drilled to provide oil passage to the piston pin, and to oil-cool the piston. Connecting rods are balanced to close limits. Crankpin bearings are solid aluminum alloy, precision type. Piston-pin bushings are bronze and are precision bored. Look under the hide for built-in quality.

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

Rough, Rugged, Heavy Duty Lubes for every equipment need!



Look over this complete line of all-weather... all-purpose lubricants!

NAME ANY LUBRICATION PROBLEM you can think of! There's the right grade and type of Cities Service lubricant to do a real job for you. This performance-tested line of quality products will help speed your heavy duty operations, cut maintenance costs, prevent equipment breakdowns. Get in touch with the nearest Cities Service office to learn how these high grade lubricants can help you.

- **Trojan All-Weather... All-Purpose Greases**
- **Pacemaker Oils**
- **Trojan Gear Oils**
- **Heavy Duty Motor Oils**

FREE — A helpful new booklet—Earth Moving and Construction Machinery lubrication. Above cutaway view is typical of illustrations found in this new 50-page book dealing with proper lubrication in the construction industry. Write today for your copy.

CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 254
New York 5, N. Y.
Please send me without obligation your new booklet entitled "Earth Moving and Construction Machinery Lubrication."

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Company _____

Address _____

City _____ *State* _____

We know mine power and shovel cable

—we're miners ourselves!

Power shovel loading blasted copper ore in the Chuquicamata, Chile, open pit mine of the Chile Exploration Company, an Anaconda subsidiary.

We know what ANACONDA Mine Power Cable and SH-D Securityflex Shovel Cable can do for your production because we're miners ourselves. We watch their performance in our own mines.

Here are the important features of ANACONDA Mine Power and Shovel Cables that produce more mine output per dollar of cable investment and maintenance:

Butyl Insulation for higher dielectric strength and resistance to moisture; for less damage by heat and compression.

Neoprene Jacket and Fillers for light weight, flexibility, flame resistance, freedom from electrolysis. Neoprene makes a tougher jacket, costs you less, makes cable more adaptable, easier to handle.

Special Features of Type SH-D Securityflex Shovel Cable are its patented non-kinking rubber-cored ground wires that provide large contact area with the conductor shield; the copper-cotton conductor shield that eliminates chafing failures, greatly simplifies splicing.

Ask your nearest Anaconda Sales Office or Anaconda Distributor for complete information. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

51358

the right cable for the job

ANACONDA®

WIRE AND CABLE

TOURNADOZER feeds asphalt plant shows over

After a resurfacing job is completed, Tournadozer cleans up around asphalt plant site . . . then is driven under its own power over main highways ahead of the plant to prepare a new work area. In 16 months, the "C" made 4 major highway moves . . . drove a total of 249 miles . . . from Hattiesburg to Picayune . . . after 2 months, to Ellisville . . . 4 months later, to Waynesboro . . . after 10 months of feeding work there, to its present site at Mize.

Original tires still good after 3½ years

Since 1948, this C Tournadozer has been providing sand and gravel for the Southern District asphalt plant of the Mississippi State Highway Department. In addition to feeding material to the plant, which last year produced more than 80,000 tons of asphalt, the veteran "C" works so fast it has also had time to handle a wide variety of odd dozing jobs. According to the Plant Supt., the Tournadozer has been 90% efficient in over 6000 hours of operation.

Here's typical production:

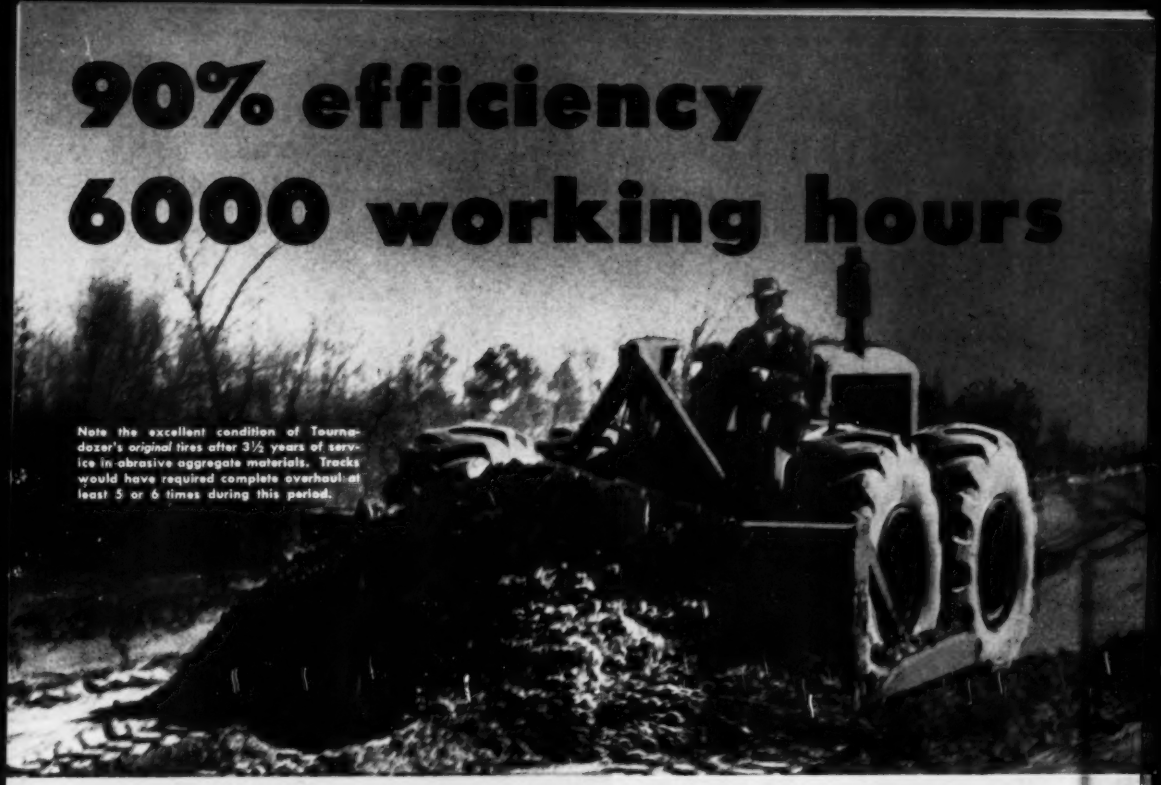
Moving clayey sand and fine gravel from pit to hopper, Tournadozer easily delivers enough material to produce up to 770 tons of asphalt per 9-hour day. Last year, despite heavy hopper requirements and long dozing cycles of 600′ to 1200′, Tournadozer handled 100% of the feeding work in 50 to 70% of its time . . . used spare hours to maintain haul roads and handle other dozing tasks.

"Takes place of 2 crawlers"

"If we didn't have this Tournadozer," says Plant Supt. Grady McCardle, "it would require 2 crawlers to assure

R. G. LeTOURNEAU, INC.,
PEORIA, ILLINOIS

90% efficiency 6000 working hours



Note the excellent condition of Tournadozer's *original* tires after 3½ years of service in abrasive aggregate materials. Tracks would have required complete overhaul at least 5 or 6 times during this period.

maximum plant production, and the track maintenance required would make it prohibitive. *We are still running our C Tournadozer on its original tires and we have not had one minute's trouble with them.*"

"Could not operate without it"

Asst. District Maintenance Engineer J. F. Calhoun adds, "Tournadozer is the only tool we've found that can keep our plant supplied. We could not operate successfully without it. The electric-control C Tournadozer gives us both speed and power when we need it."

"Easy to operate"

Tournadozer operator, J. E. Chandly, who's spent 8 years on construction equipment, reports, "It's the easiest machine I've ever operated. Compared to a crawler, it's like driving a new car alongside an old truck."

Check Tournadozer for your work

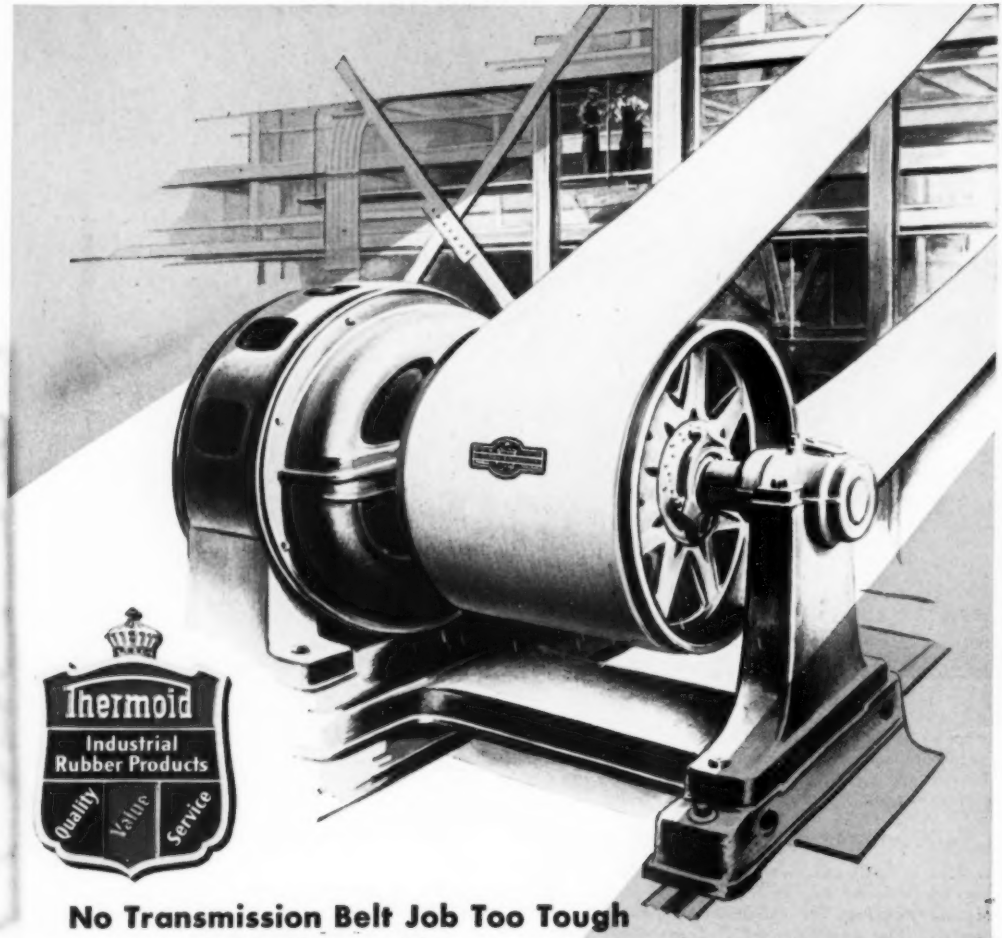
Tournadozer's ability to work day after day, month after month, with minimum downtime for weather or repairs . . . plus its ability to double or triple crawler production under most conditions . . . can mean very substantial savings for you, too. Have your LeTourneau Distributor give you the complete picture of how the rubber-tired, 19 m.p.h. Tournadozer can increase production at *your* pit.

Tournadozer makes light cut 300 ft. from hopper . . . rolling action mixes material as it picks up 2½-yd. load. To get proper mix for asphalt manufacture, dozing "push" is sometimes started 600 ft. from the hopper. These longer 1000 to 1200' cycles would keep 2 crawlers busy continuously . . . Tournadozer, however, handles required production at this distance with time to spare for maintenance-type jobs.

Tournadozer—Trademark Reg. U. S. Pat. Off. 8247 pq

HIGH-SPEED, RUBBER-TIRED EXCAVATING HAULING • LIFTING EQUIPMENT

R. G. LeTOURNEAU EQUIPMENT



Thermoid
Industrial Rubber Products
Quality Value Service

No Transmission Belt Job Too Tough ...For Thermoid

Have you some really tough transmission jobs—regular belt killers? They won't be too tough for a Thermoid Transmission Belt. Let your Thermoid Distributor prove that by furnishing exactly the right belt for your job.

For general service he will offer "400", the all-purpose belt that will satisfactorily service all normal operating requirements.

For severe service, or for high speeds with small pulleys, he will recommend Thermoid High Speed "R", made with extra strong, hard 35-oz. duck and top grade rubber. Where there are oil or fumes injurious to rubber, he will recommend Thermoid High Speed "N", with Neoprene friction and skim. Each type is practically custom-built for the service for which it is recommended.

Here's The Book That Will Answer Many of Your Questions

Ask for your free copy of Technical Bulletin No. 3678. It contains practical information, charts, tables and diagrams which will help you select the right transmission belt for your requirements.

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Conveyor & Elevator Belting • Transmission Belting
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Rubber Sheet Packings • Molded Products
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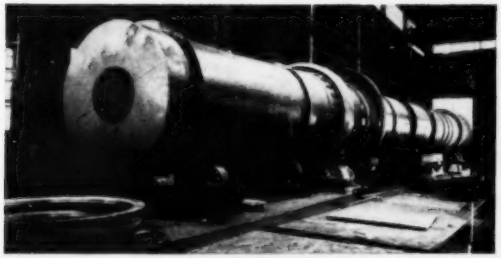
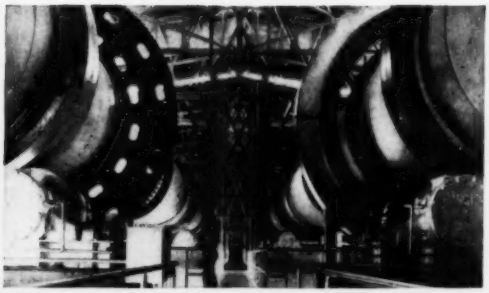
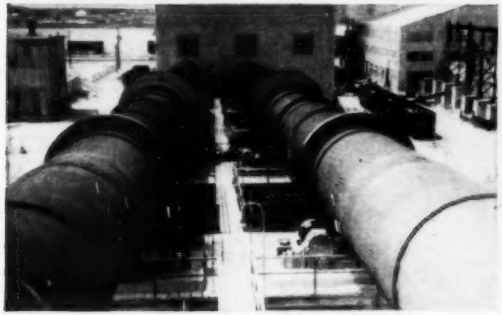
Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

Have Your Kiln "Traylor-Made" To Cut Thermo-Processing Costs





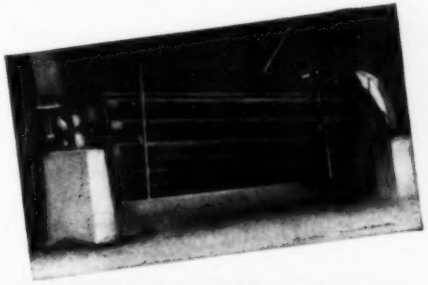


Traylor's individual engineering pays off in greater operating economy . . . better product quality.

In building literally miles of Rotary Kilns, Traylor has seldom built two exactly alike, except for the same customer on the same process. Each one has been "Traylor-made" especially for its particular job.

Diameter; length; type of supports; method of firing; all have a direct bearing on the operating efficiency and quality of product produced by a Rotary Kiln. That's why Traylor engineers make a careful study and detailed analysis of each individual installation before a kiln is "Traylor-made" for the job. Consult with Traylor engineers to benefit by this method of solving calcining problems. There's no obligation.

Rotary Coolers, Dryers and Slakers are also in Traylor's line of process equipment. Traylor Rotary Coolers are built in 3 types; Dryers in 2 types. Traylor Slakers, like the coolers and dryers, employ many of the same construction features that have made Traylor Rotary Kilns the choice of leading Chemical Processors throughout the world. Mail coupon for bulletin 6121.



Traylor

Jaw, Reduction and Gyratory Crushers
Grinding Mills . Crushing Rolls
Rotary Kilns, Coolers and Dryers

TRAYLOR ENGINEERING & MANUFACTURING CO.
418 MILL ST., ALLENTOWN, PA.

Send bulletin 6121 which describes Traylor's Process Machinery

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Company _____

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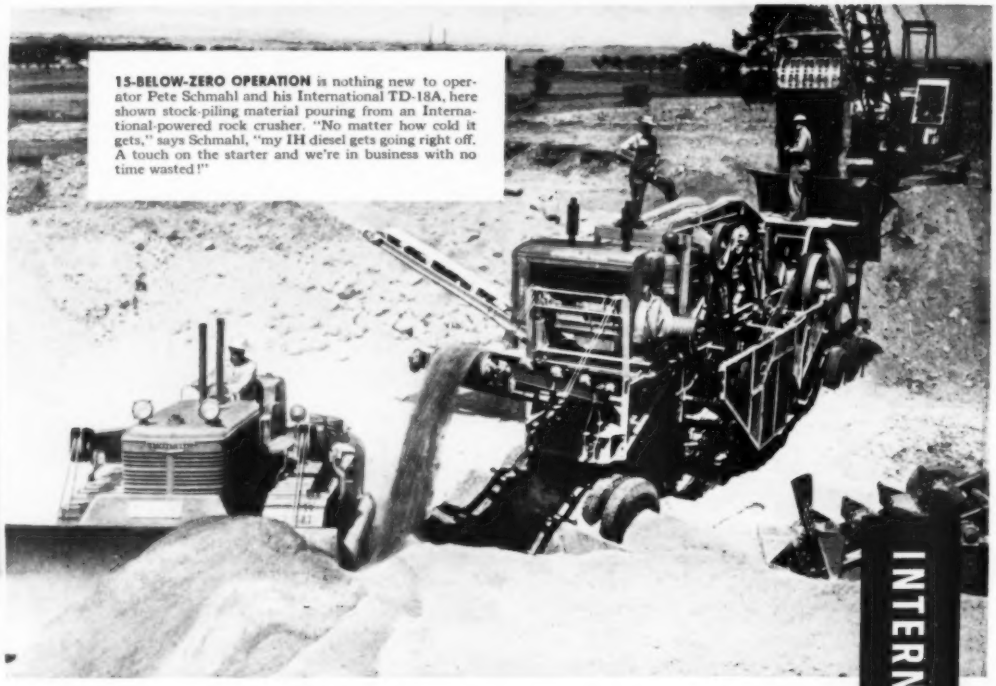
SALES OFFICES: New York, N.Y.; Chicago, Ill; Los Angeles, Calif.
CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P.Q.

A "TRAYLOR" LEADS TO GREATER PROFITS

Rocky Mountain ROCK CRUSHER



15-BELOW-ZERO OPERATION is nothing new to operator Pete Schmahl and his International TD-18A, here shown stock-piling material pouring from an International-powered rock crusher. "No matter how cold it gets," says Schmahl, "my IH diesel gets going right off. A touch on the starter and we're in business with no time wasted!"

Versatile Colorado contractor finds International power pays off on every job

Colorado's Winslow Construction Company handles almost every phase of moving and processing earth and rock. They excavate, build roads, produce crushed stone, clay and sand for their own and other construction jobs.

All along the line, they rely on International crawlers and power units. For example, to supply cushion material for the new Denver-Boulder super-highway, Winslow uses a UD-18A engine to run the rock crusher, and a TD-18A crawler to stockpile finished material and push raw rock up to the dragline.

"We've got eighteen Internationals," says Winslow, *"because we demand machines that give minimum operating costs and maximum work done per day. Also we get constant attention from our International Industrial Distributor. He figures his job isn't over when he makes a sale. His goal is a satisfied customer. And we're more than satisfied. We're enthusiastic!"*

Get the low-down on International machines from your distributor. Put *"Power that Pays"* to work for you!

International Harvester Company, Chicago 1, Ill.

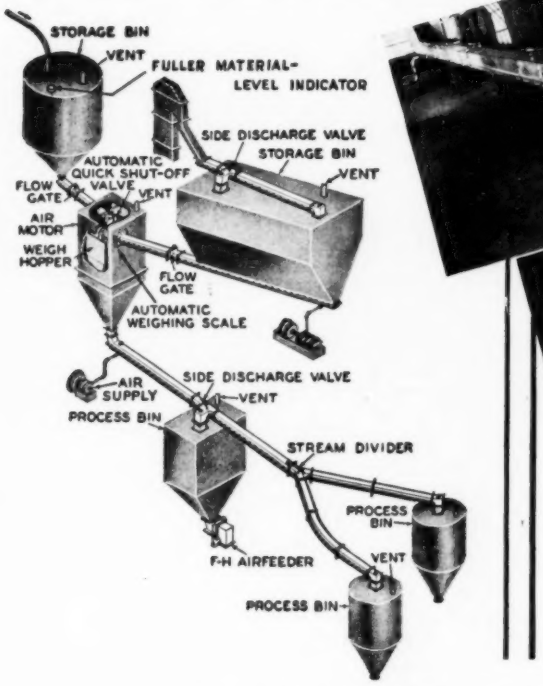
INTERNATIONAL

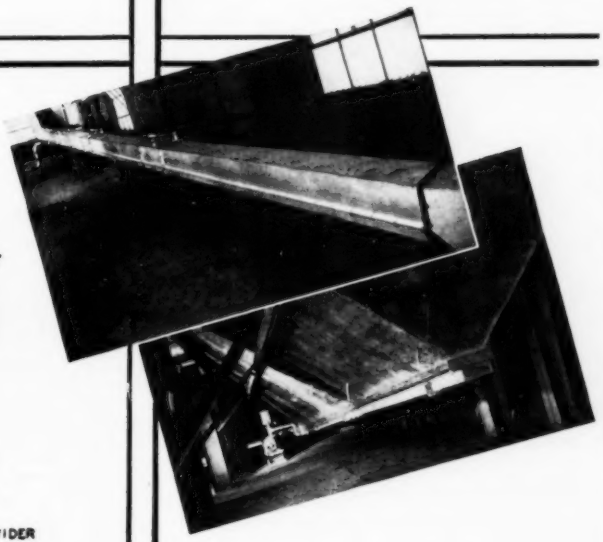
INTERNATIONAL HARVESTER

POWER THAT PAYS

only the material moves

in the F-H Airslide®





It's simple—it's sure—it's sanitary—it's safe, (no hazardous moving parts)—it saves—this improved method of *flowing* fine, dry materials. The F-H Airslide Conveyor is being more and more widely considered, and used, in various industries. It eliminates dust nuisances, saves man-hours, keeps production flowing smoothly at minimum operating cost.

The F-H Airslide consumes little power—only that required for a small volume of air at low pressure. Valuable floor space is saved, and the system can be installed with a flexibility impossible to obtain with a conventional conveyor.

Chemical processing plants of every size and type will find the Airslide Conveyor the solution to the problem of transporting fine, dry materials, with maximum efficiency and economy.

A Fuller engineer can show you how the system can be put to work for you—how you can increase efficiency while you reduce operating costs. Why not contact us today?

Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—COMPRESSORS AND VACUUM PUMPS—FEEDERS, AND ASSOCIATED EQUIPMENT

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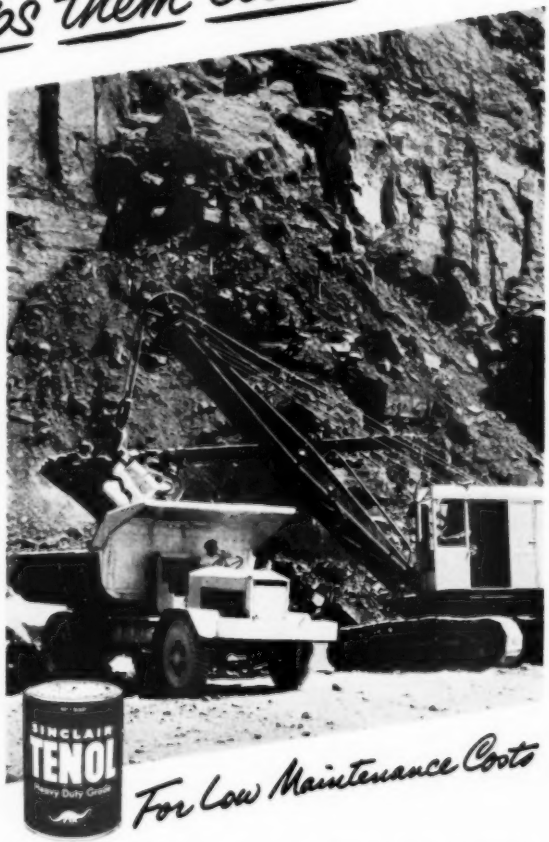
LONGER ENGINE LIFE because this lubricating oil also CLEANS ENGINES — and keeps them clean!

For over 15 years . . . in all types of diesel and gasoline engines in rugged, heavy-duty service . . . Sinclair TENOL® has been doing an outstanding job. TENOL has *proven* it provides long periods of trouble-free operation at sustained high power output, with lowered upkeep costs.

Sinclair TENOL is not to be compared with many alleged "heavy-duty" oils. TENOL is the real thing! You can easily tell if an oil is actually "heavy-duty" . . . See if it is approved under new Military Specification MIL-0-2104. TENOL far surpasses this stringent Government standard!

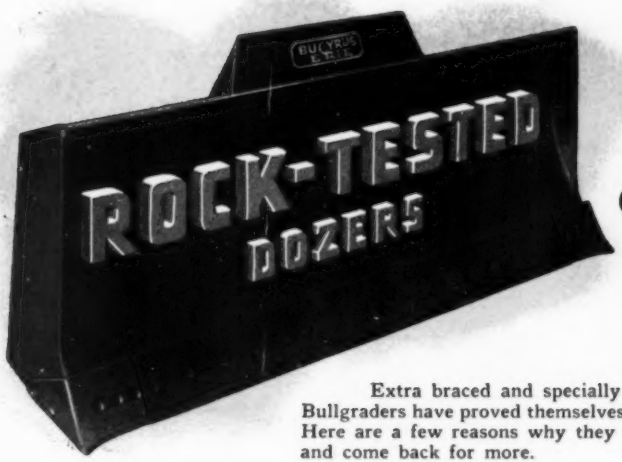
Save your valuable equipment — phone your nearest Sinclair Representative or write direct to Sinclair Refining Company, 600 Fifth Ave., New York 20, N. Y.



SINCLAIR TENOL prolongs engine life

For Low Maintenance Costs

- No more lacquering of pistons, cylinders, valves.
- TENOL keeps valves and rings from sticking.
- TENOL prevents clogging of oil pump screens and oil channels.
- With TENOL, engines stay clean — free from harmful sludge and carbon.
- TENOL does not thin out at high temperatures, flows freely at low temperatures.
- Low oil consumption with full power, with TENOL.
- TENOL prevents corrosive wear of bearings and other parts.
- TENOL eliminates foaming.



Take QUARRY JOBS IN STRIDE

Extra braced and specially faced Bucyrus-Erie Bulldozers and Bullgraders have proved themselves on everything from shale to granite. Here are a few reasons why they can take the daily quarry pounding and come back for more.

1. Cutting edge is of special wear-resistant alloy steel, bolted to the blade with extra tough alloy plow-bolts.
2. Backs are reinforced top-and-bottom by flanged beams providing extreme rigidity and resistance to distortion.
3. Box section main frame is a welded unit with castings at the corners to withstand extra stresses concentrated at these points.
4. Replaceable cast alloy steel corner shoes are heat-treated and hard-surfaced to provide a flint-like facing.
5. Bulldozer blade assembly is solid welded without pin connection, giving the front-end single unit stability.

For rough and tough quarry dozing, you can't beat these outfits. Your International Industrial Tractor Distributor will be happy to give you many additional reasons why.

288T51

BUCYRUS ERIE

SOUTH MILWAUKEE
WISCONSIN

For championship dirt-moving performance, investigate the

BIG RED TEAM

International TD-24 Tractor with Bucyrus-Erie B-170A or B-250 Scraper.

See Your INTERNATIONAL Industrial Tractor Distributor

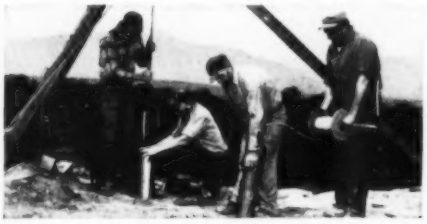
EXCELLENT FRAGMENTATION

with Du Pont "NITRAMON" plus maximum safety

AT LIMESTONE QUARRY

1. Close-up of limestone quarry face at Alpha Portland Cement Company's Cementon, N. Y., property. Du Pont "Nitramex"* and "Nitramon"** are used exclusively for safety, better breakage, lower costs. Typical blast has 13 well-drill holes, 6" in diameter, with average burden of 25 feet.

2. Loading simplified as watertight cans of "Nitramon" blasting agent are lowered with tripod rig. Safety of "Nitramon" reduces storage and handling problems . . . eliminates risk of headaches.



3. "Nitramon" Primer (itself relatively insensitive) is detonated by Primacord. After loading is completed, two electric blasting caps in series are taped to short length of Primacord. Lead wires are attached to Du Pont Blasting Timer set for .015 second intervals. Then short lengths are tied to Primacord down line.

4. Distant view of shot. Total of 12,737 pounds was loaded for estimated yield of 36,000 tons of limestone rock. Reduced vibration and minimum back break are additional advantages of planned "Nitramon" blast.

5. Resulting excellent fragmentation facilitates removal of rock by shovels . . . reduces blockholing . . . lowers costs . . . all with maximum safety. Note how blast sheared wall clean. Count the drill holes!

DU PONT "Nitramex" (for extra strength at the toe) and "Nitramon" are ideal for quarry blasting and are widely used because of their safety features. They cannot be detonated by blasting caps, friction or impact of falling objects. However . . . "Nitramon" Primer may always be relied upon to detonate the charge. Ask any Du Pont Explosives representative for complete information. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

*Reg. Trade-mark for Du Pont ammonium nitrate blasting agent.
**Reg. Trade-mark for nitrocarbonitrate blasting agent.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Increase the life of *Wearing* parts

This NEW booklet tells you how

Every manufacturer or user of metal parts . . . every welding engineer, master mechanic, maintenance superintendent, and plant foreman . . . should have a copy of this really *complete* booklet on hard-facing. It takes all the guesswork out of choosing the right alloy, the right welding process, and the best welding procedures for applying the rod.

Use the coupon below to order your copy of this 40-page booklet. You'll find it a big help in solving most of your hard-facing problems.

Here is What's in it—

Which Metals Can Be Hard-Faced—

A 2-page chart listing 21 metals . . . and recommending suitable hard-facing rods for each.

How to Select the Right Rod—

Factors to consider in making your selection and a comparison of the characteristics of hard-facing deposits.

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Where and why to use oxy-acetylene, metallic-arc, HELIARC, mechanized oxy-acetylene, or UNIONMELT welding for applying hard-facing materials.

How to Make the Deposit—

Detailed, step-by-step instructions for applying HAYNES hard-facing alloys by both the oxy-acetylene and metallic-arc welding processes.

Properties of HAYNES Hard-Facing Alloys—

Description, properties, and available sizes of 12 hard-facing materials.

"Haynes," "Heliarc" and "Unionmelt" are trade-marks of Union Carbide and Carbon Corporation.

HAYNES Trade-Mark Alloys

Haynes Stellite Company
A Division of
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Please send me, without obligation, a copy of the new booklet "HAYNES Alloys—Hard-Facing Manual."

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COMPANY _____
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"EUC" PERFORMANCE Pays Off

IN MINES and QUARRIES

"Eucs" are designed and built for moving coal, rock, ore, overburden and heavy excavation at the lowest cost. The simple but rugged construction of Euclids, combined with large capacity, ample power and speed, provide efficient off-the-highway hauling of practically any material.

Euclids are standard equipment in many leading open pit mines and quarries, and on construction and industrial work. Owners know that Euclid staying power and continuous operation result in more loads hauled in less time at lower cost.

Ask your Euclid distributor for data on quarry or open pit jobs similar to yours. There is a Euclid to meet your requirements for off-the-highway hauling work.

Rear-Dump Euclids—Capacity from 10 to 34 tons—diesel engines from 125 to 400 h.p., spring mounted or semi-rigid drive axles—top speed loaded up to 35.7 m.p.h.

MORE LOADS PER HOUR— MORE PROFIT PER LOAD

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

SERVICE HOURS

...not Footage

The True Yardstick of Air Hose Value

When buying air hose, your thinking should not be in terms of footage-per-dollar but rather in terms of service hours.

Experience tells you that the hose which is built with an *extra* measure of strength, flexibility, damage resistance and safety is surely your soundest investment.

This is true of *every* BWH Air Hose. Each has been specifically developed, tested and field-proven to give maximum long, trouble-free life in its job.

Get in touch with your BWH distributor — *today.*

BWH

DEPENDABLE RUGGEDNESS

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS.
P.O. BOX 1071, BOSTON 3, MASS., U.S.A.
Warehouse Stock, 111 N. Canal St., Chicago, Ill.

CONCORD AIR — An extra quality, exceptionally rugged hose for toughest use on air drill and pneumatic service in mines, quarries and construction jobs. Non-porous tube resists heat and oil. High tensile cotton yarn braid reinforced carcass. Tough grey cover resists cutting, gouging, abrasion. 7 sizes from ½" 2-braid through 2" 3-braid. 200 to 300 lbs. working pressure. Maximum length 50'.

BAY STATE AIR DRILL — For heavy construction work in mines, quarries, tunnels and wherever large size hose is required for long service. Smooth black tube resists heat and oil. Carcass of strong, rubber-impregnated multiple ply woven duck. Rugged, heavy-gauge red rubber cover resists severe weather extremes, cutting, abrasion. 9 sizes stocked from ½" to 4". Working pressures from 150 to 225 lbs. Max. length 50'.

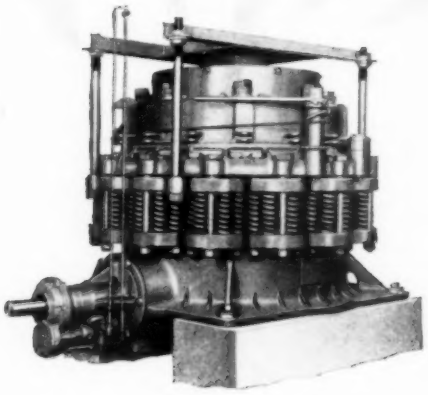
AUROCHS AIR — For portable air compressors, jackhammers, rugged industrial and construction work. Smooth, black, non-porous tube resists heat and oil. Carcass: multiple ply, rubber-impregnated, rugged woven fabric. Tough black cover resists weather and abrasion. Stocked sizes: ½", ¾", 1". 200 lbs. working pressure. Maximum length 50'.

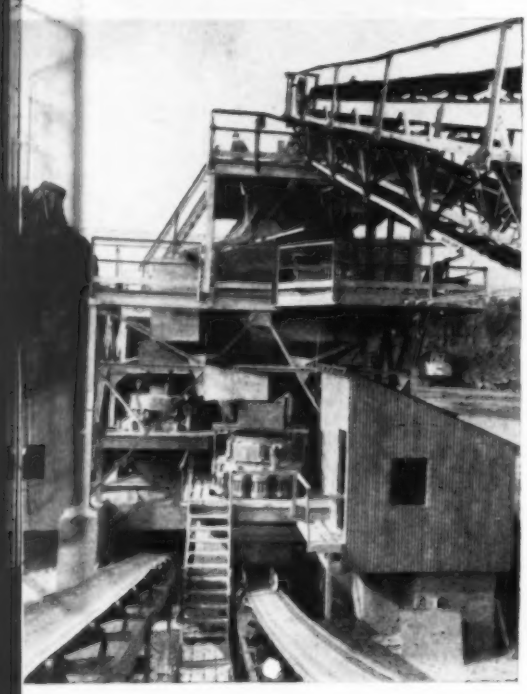
VIM AIR — For general industrial use, on compressors and pneumatic tools. Black tube resists oil and heat. Husky cotton yarn braids. Smooth, red cover resists weather, abrasion. 8 sizes stocked, ¼" 2-braid to 1" 3-braid. Working pressures: 150 to 225 lbs. Maximum length 500'.

BULL DOG VARI-PURPOSE AIR — For a variety of jobs including handling of air, water, oil, gasoline, kerosene (not for paints, lacquers, lacquer-solvents). Black, synthetic tube resists oil and heat. Carcass is braided rayon cord, high strength, super flexible. Smooth, brown, tough synthetic cover resists oil, abrasion, sunlight. 11 sizes stocked from 3/16" one-braid to 1" 2-braid. Working pressures: 200 to 300 lbs. Maximum length approximately 500'.

Symons Cone Crushers

. . . UNSURPASSED For Fine Low Cost Crushing of GRANITE and TRAPROCK





Three "SYMONS" Cone Crushers (two 4-ft. and one 7-ft.) used in the secondary tower of the Kingston Trap Rock Co., Kingston, N.J. This is one of scores of similar "SYMONS" Cone Crusher installations.

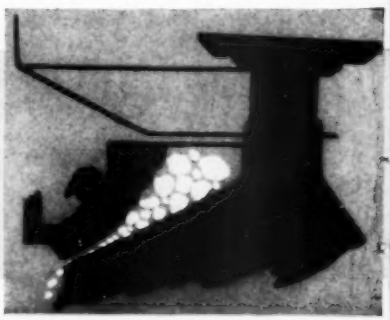
THE action of the *"SYMONS"* Cone Crusher makes it ideal for fine crushing of granite and traprock at low cost. Because of the rapid gyration and wide throw of the head the material being crushed receives a series of rapid hammer-like blows as it passes downward through the crushing cavity. Free fall of material between the timed series of sharp impacts —rather than the material just being "pinched" by a slow, short throw head—results in less wear from abrasion.*

The hundreds of *"SYMONS"* Cone Crushers being used by major producers of crushed granite and traprock are evidence that these Nordberg built crushers are unsurpassed for this hard, tough, abrasive rock.

Write for details on a size and type of *"SYMONS"* Cone Crusher to meet your specific requirements.

***MAXIMUM LINER UTILIZATION**

With the Symons process the crushing action occurs throughout the entire length of the cavity. The resulting uniform manganese wear means minimum scrap loss and low manganese cost per ton of crushed product.



NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN
NEW YORK • SAN FRANCISCO • WASHINGTON • SPOKANE
MEXICO, D. F. • LONDON • TORONTO • JOHANNESBURG

"SYMONS," a Nordberg trademark known throughout the world

C251-R

NORDBERG

Machinery for processing ores and industrial minerals

"SYMONS" PRIMARY CRUSHERS

"SYMONS" VIBRATING BAR GRIZZLIES

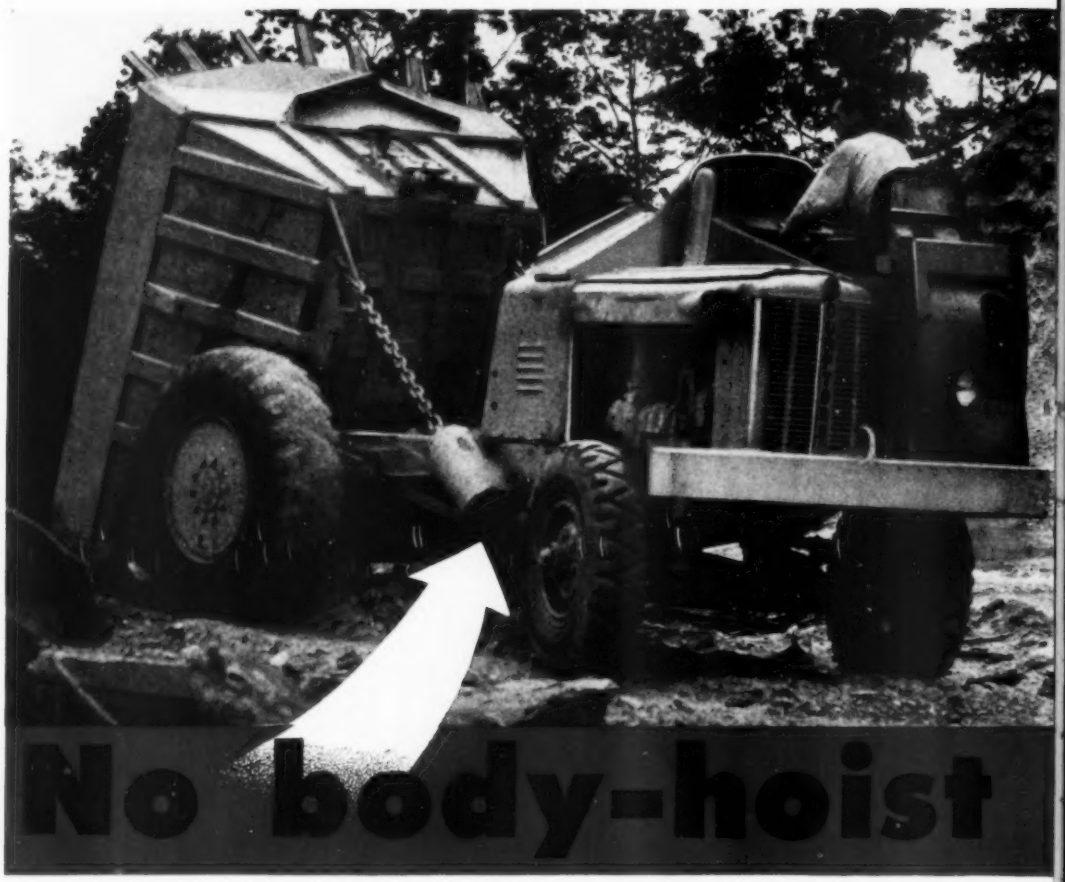
"SYMONS" ROD DECK SCREENS

GRINDING MILLS

MINE HOISTS

May
the true
meaning of
Christmas
become the
pattern for our
lives . . . for yours
and ours, and for
people's everywhere.
That is the Holiday
wish from all of us.

Bemis



No body-hoist

CUTS MAINTENANCE COSTS . . . SPEEDS HAUL CYCLES

Koehring Dumptors have no slow-working body hoists. Trip the release lever and gravity dumps the 6-yard load in one second. It's as simple as that! No complicated mechanical hoists to slow up haul cycles . . . no expensive replacement parts, costly hoist maintenance or down time to eat into your profits. And gravity dump is instantaneous and trouble-free in all temperature extremes . . . never wears out.

No costly spring maintenance is another money-saving advantage you get with Koehring Dumptors. There is just one big, double-coil chassis spring on steering axle . . . none on driving axle. Extra-big, shock-absorbing drive tires eliminate need for more. You save spring maintenance time and replacement costs.

Check your body hoist and spring maintenance costs for a year . . . see how much you'll save by using Dumptors. What's more, Dumptor's no-turn shuttle haul and constant-mesh transmission for 3-speed travel forward and reverse, increase production . . . and your profits. See your Koehring distributor now for all the facts . . . or send today for the informative 28-page Dumptor catalog.

KOEHRING CO., Milwaukee 16, Wis.

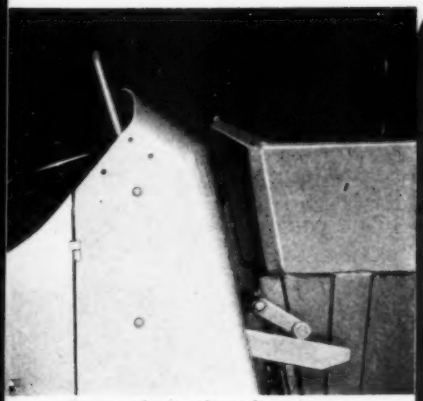
Subsidiaries: KWIK-MIX • JOHNSON • PARSONS

CK121

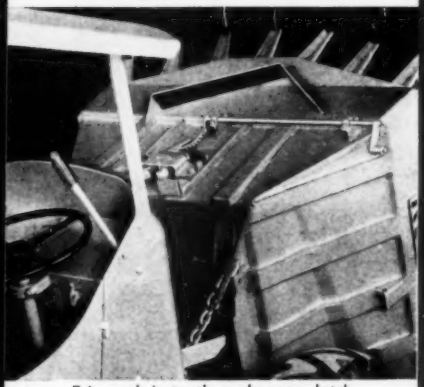
KOEHRING HEAVY DUTY

KOEHRING DUMPTOR®

CRANES UP TO 79½ TONS LIFT CAPACITIES . . . EXCAVATORS UP TO 2½ YARDS



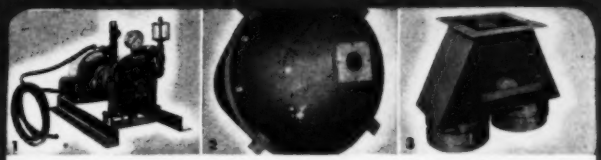
Dumptor body release lever is conveniently located alongside steering wheel . . . there's no reaching or stretching necessary . . . trip lever engages trip rod on body.



Trip rod instantly releases latch hooks from latch seat on chassis frame . . . and gravity dumps the load. Latch automatically locks as body returns to loading position.

Scoop-shaped Dumptor body rolls on heavy-duty rockers. Snub chains are attached to big, coil-spring shock absorbers, which check the body at approximate 70 degree tilt.

INCREASE BATCH PLANT PROFITS
with Johnson accessories



1 **Rotary Vane Compressor** gives 7 cu. ft. air pressure per min. cement aeration. 15-lb.-limit relief valve.

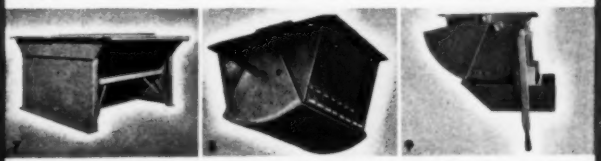
2 **Aeration Fittings** properly spaced in Johnson bins and silos keep cement free flowing.

3 **2-Way Elevator Discharge Valve,** a flop-type chute, directs flow of cement to the storage tank.

4 **Pivoted Distributor** feeds aggregates to bin sections. Positions and locks by ground control wheel.

5 **Bin Signals** accurately register high and low levels in cement or aggregate. Dust-proof.

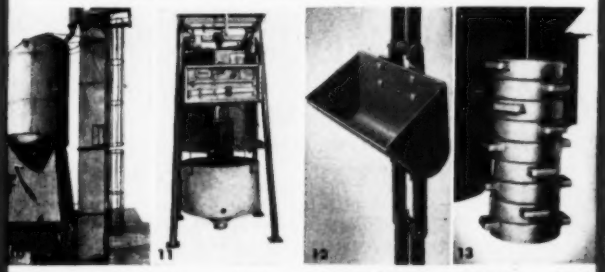
6 **Rotary Plug Valve** accurately controls cement flow. Plug operates freely in self-aligning bearings.



7 **Receiving Hopper** 30 and 50-bbl. sizes, feeds bulk cement to elevator. All-welded, weather-proof.

8 **Aggregate Fill Valves** single clam, radial type for jam-proof closing. Hydraulic pressure lubrication.

9 **Tunnel Gate** for stockpile reclamation. Single radial clam. Skirt board is hinged, opens and locks securely.



10 **Safety Cage** of 28 steel, welded to casing, can be furnished with all Johnson elevators.

11 **Water Weigh Batchers,** semi- or full-automatic types. 120 and 240-gal. sizes available.

12 **Elevator Buckets** in many sizes for aggregates, and cement. **Steel Chain** has carburized knuckles.

13 **Batcher Test Weights** in sets of nine, 50 lb. calibrated units, and two 25 lb. steel hangers.

Mail to **C. S. JOHNSON COMPANY**
CHAMPAIGN, ILLINOIS
(Koehring Subsidiary)

Send us literature on items checked: 1 2 3 4 5 6 7 8 9 10 11 12 13

NAME ..... TITLE .....

COMPANY .....

STREET .....

CITY ..... STATE .....

THOMAS DREDGE PUMPS *Do a Mighty Good Sand & Gravel Job on Ole Man River*

The Girod Company, Inc.

Vicksburg, Mississippi

26 October 1951

Thomas Foundries, Inc.
Birmingham
Alabama

Gentlemen:

Early in 1950 we installed our first Thomas Pump, Series 12, with 14" suction, 12" discharge for pumping sand and gravel from the Mississippi River.

This Thomas Pump did an outstandingly good job, both as regards production of a large quantity of material per hour and showing surprisingly long service life.

As you know, we ordered a spare set of parts after several months, assuming that these parts would be needed, and this was based on our past experiences. When the pump was finally opened up we were very much surprised to note the excellent condition of the parts and the fact that they were not needed at that time.

Our experience with the original Thomas Pump was so excellent that when additional production was required we placed an order with you early this year for another identical Thomas Pump for use on our second dredge, and this has now been in service for several months.

Our experience with the Thomas Pumps has been most pleasing. We also like very much the fine cooperation you have given us in the use of this equipment.

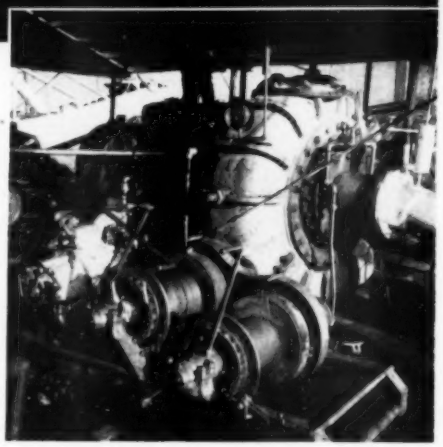
Yours very truly,

The Girod Company, Inc.

Fred Girod

Fred Girod, President

FG/jec



One of Girod Company's Thomas Pumps in operation.

Mr. Girod - Says

"We liked first one so well that we have installed SECOND THOMAS PUMP"

Mr. Girod has used Thomas Dredge pumps for nearly 2 years and knows what he's talking about. He has proved to himself by experience that his Thomas pumps give him increased production and longer service life. Imagine his surprise and pleasure when he found out that the spare parts he ordered were not needed.

Mr. Girod is another sand and gravel man who finds that the special design of Thomas pumps which permits the use of metal highly resistant to abrasion, shows up on the profit side of his office ledger. We realize that some of our claims (Thomas pumps have 3 to 6 times greater service life) have sounded like exaggeration. But you can't fool the man who owns one. Mr. Girod says our claims are facts — facts that may be helpful to you. Write for illustrated folder. THOMAS FOUNDRIES, INC., BIRMINGHAM, ALABAMA.

Girod Company's stock piles of sand and gravel and general view of one of the Girod dredges in operation on the Mississippi River.

IT COSTS LESS TO OWN THE BEST!

KENNEDY PREHEATER, SOAKING PIT & DEHEATER

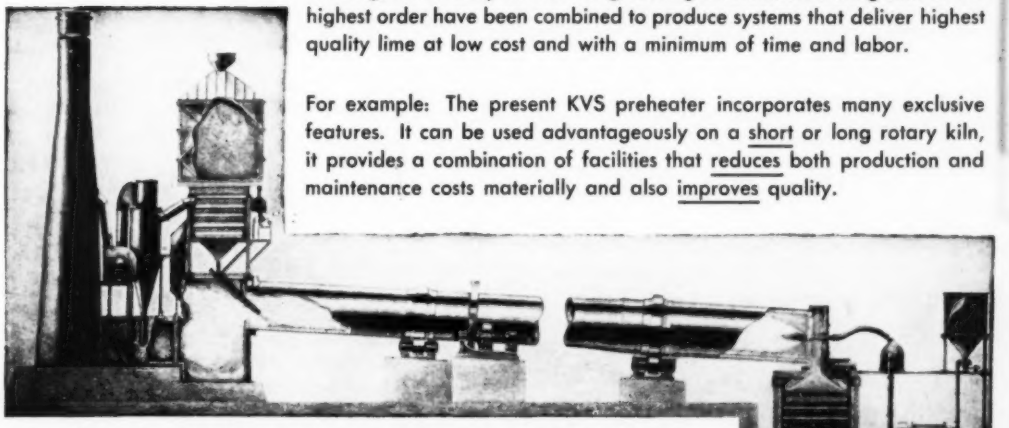
RECOVERS AND UTILIZES EXIT GASES
NO MOVING PARTS . . . NO MAINTENANCE COSTS
ELIMINATES ALL OVERBURNING OR UNDERBURNING
HEAT RADIATION HELD TO A MINIMUM
QUICK ADJUSTMENT . . . EASE OF CONTROL
UNIFORM OPERATION, ALL STONE RECEIVES SAME TREATMENT

Increases capacities up to 20%

Shows fuel savings up to 40%

KVS Lime production equipment has established a world-wide reputation for long, satisfactory service. Engineering and manufacturing skill of the highest order have been combined to produce systems that deliver highest quality lime at low cost and with a minimum of time and labor.

For example: The present KVS preheater incorporates many exclusive features. It can be used advantageously on a short or long rotary kiln, it provides a combination of facilities that reduces both production and maintenance costs materially and also improves quality.



Blue prints and engineering data are available on request. Send for bulletins describing, fully, the world-famous KVS lime production equipment.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO EAST AVENUE, NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

Kennedy Gyratory Crushers
Produce Maximum Tonnage Daily

BUILT STRONGER TO LAST LONGER WITH THESE EXCLUSIVE KVS FEATURES

★

Synchronous motor built into pulley assembly

★

Frictionless, smooth, quiet operation

★

Power applied only for crushing

★

No gears to waste power

★

Forced Feed lubrication

★

Roller bearings

★

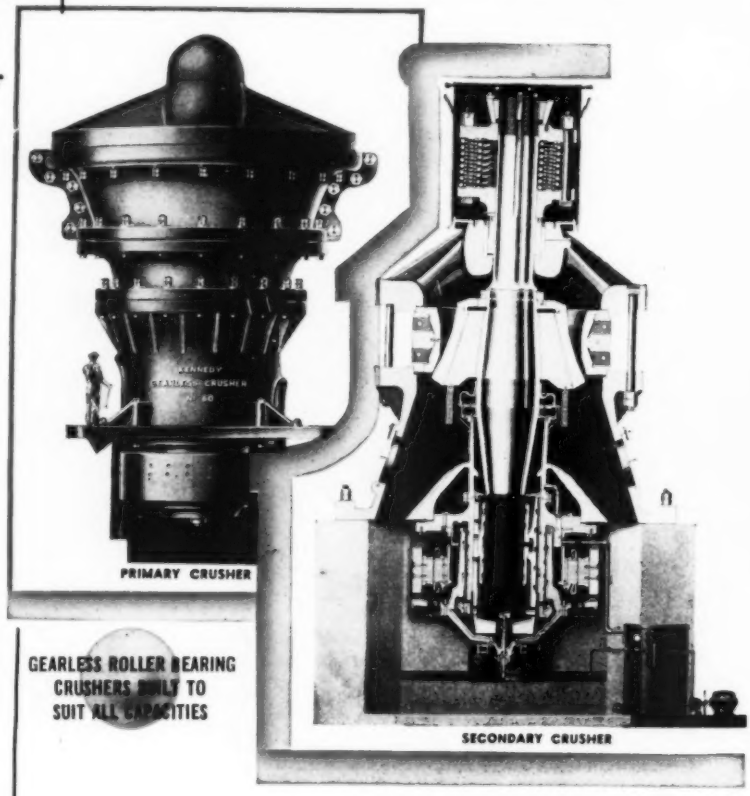
Added power at no extra cost

★

Costs less to operate

★

Greater capacity with use of less power in all models



PRIMARY CRUSHER

SECONDARY CRUSHER

GEARLESS ROLLER BEARING CRUSHERS BUILT TO SUIT ALL CAPACITIES

KVS GYRATORY CRUSHERS are designed to produce maximum tonnage of uniform products, consistently, economically, with a remarkable record of freedom from shut-downs for repairs.

BUILT-IN QUALITY AND FINE WORKMANSHIP is the answer. The engineering principles which make Kennedy crushers the most outstanding in the field, come to life in the use of chemically tested steel and highest quality materials.

EXTREMELY RUGGED CONSTRUCTION cuts operating costs, reduces maintenance to a minimum and delivers more rock tonnage, faster and at lower cost than any other comparable model.

THE KVS OILING SYSTEM HAS BEEN PRONOUNCED virtually "fool-proof." These fine crushers run for years with practically no maintenance. Send for bulletin describing the complete line of KVS crushers. They show why "It Costs Less To Own The Best."

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

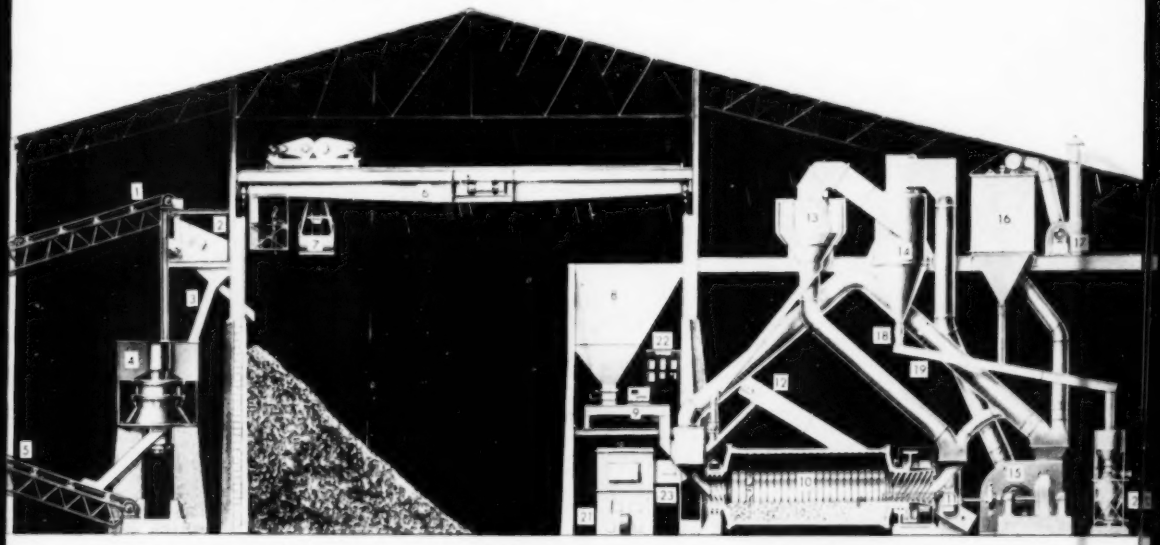
TWO PARK AVENUE, NEW YORK 16, N. Y. —:— PLANT: DANVILLE, PA.

KENNEDY STRATIFIED AIR SWEPT TUBE MILL SYSTEM

(Patents Pending)

WITH DUAL CLASSIFICATION

for raw stone, ore and clinker grinding lowers grinding costs...reduces power consumption...cuts maintenance costs



1 Belt conveyor—feed to crusher
2 Vibrating screen
3 Oversize return chute
4 Gearless gyratory crusher
5 Belt conveyor—closing crusher circuit
6 Traveling crane
7 Clamshell bucket
8 Mill feed hopper
9 Weighing feeder
10 Stratified Air Swept Tube Mill
11 Cross conveyor for oversize
12 Return conveyor for oversize
13 Radial flow classifier
14 Cyclone collector
15 Mill exhauster
16 Dust filter
17 Dust filter exhauster
18 Rotary air locks
19 Finished material conveyor
20 Finished material to storage silo
21 Hot air furnace
22 Instrument and control cubicle
23 Automatically controlled tempering air damper

The Kennedy Stratified Air Swept Tube Mill System produces 94% plus through 325 mesh when grinding clinker 2 inches and finer. It dries and grinds simultaneously and air-cools cement while grinding clinker.

In our test plant, when grinding to 92% through 200 mesh, 25 tests showed an increase in the capacity of the Tube Mill by the use of Dual Classification of from 29% to 52%.

The Kennedy Stratified Air Swept Tube Mill not only grinds raw material having up to 20% moisture, but becomes a combined dryer, grinding mill and separator, thereby serving a three-fold purpose.

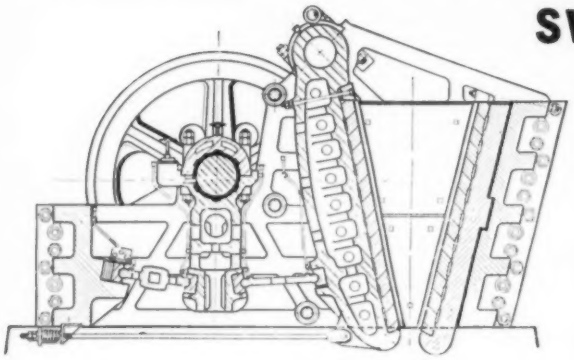
Marked economy of operation sets the Kennedy mill apart. By comparison, the savings effected in power consumption, wear-and-tear and man-hours, more than pay the initial installation cost within a ten-year or shorter period. Send for blueprints and operating data. They show why users say "It Costs Less To Own The Best."

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK —:— PLANT: DANVILLE, PA.

IT COSTS LESS TO OWN THE BEST

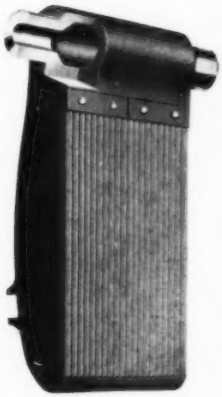
THE KENNEDY HEAVY-DUTY SWING JAW CRUSHER



BUILT TO YOUR SPECIFICATIONS IN ANY SIZE REQUIRED

Built with crusher openings from 7 inches to 66 inches . . . 6,000 to 600,000 lbs.

Frames of Herculite steel with tensile strength up to 60,000 lbs. per square inch.



Reversible Swing Jaws hold wear to an absolute minimum. Hard — Tough — Strong This Has Never Failed

POWER-PACKED, WITH THE STAMINA OF A TANK!

When you start right, you stay right and there is no better known system of economical operation than the use of equipment, designed to perform specific duties.

All KVS equipment is engineered to do the work for which it is designed at utmost efficiency. This means maximum output at minimum cost . . . long life . . . freedom from costly shut-downs for repairs and adjustments . . . ease of operation . . . low power consumption . . . uniform, high grade production.

Every claim of superiority for KVS products is based on field surveys and reports from users in every part of the world. It isn't hard to understand why these fine crushers continue to produce peak loads at minimum cost, year-after-year, when you realize that they represent top engineering skill, finest materials and manufacturing facilities without a peer.

Examine the blue prints and engineering specifications of any KVS crusher—they are available on request—and then judge for yourself the BASIC reasons why they deliver the most for the money under all operating conditions. Users say "It Costs Less To Own The Best" and they mean KVS.

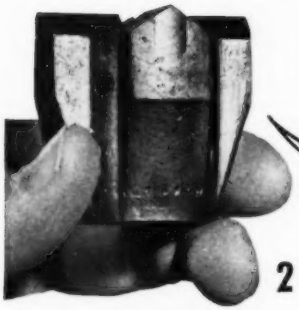
KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE
NEW YORK 16, N. Y.

FACTORY
DANVILLE, PA.

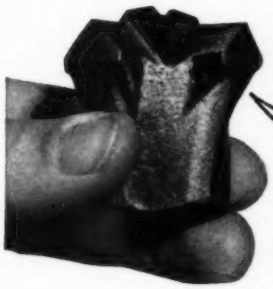
1

ONLY THE TIMKEN COMPANY OFFERS



2

ALL 3 ROCK BIT TYPES...



3

AND A COMPLETE ROCK BIT ENGINEERING SERVICE!

WHAT type of rock bit is best for your particular job? Ask the Timken Company! *Only* the Timken Company makes *all 3 rock bit types* . . . multi-use, carbide insert and one-use! So only the Timken Company can help you make an unbiased selection of the *one* best bit for your drilling needs.

Because our rock bit engineers have all three types to draw from, they can give you a *complete* Rock Bit Engineering Service. Backed by 20 years' experience in solving rock bit problems, they'll give you the bit performance you're after, whether it's lowest bit cost, lowest cost per foot drilled, greatest possible drilling speed, or any other desired advantage.

1 MULTI-USE. Gives lowest cost per foot of hole when full increments of drill steel can be drilled and when control and reconditioning of bits are correct.

2 CARBIDE INSERT. For drilling extremely hard and abrasive ground, small holes, extra deep holes. Holes go down faster, bit reconditioning is simplified.

3 ONE-USE "SPIRALOCK". For use where reconditioning is not feasible. Gives lowest unit cost of the three types. "Spiralock" union holds bit on dependably, permits easy removal.

TIMKEN

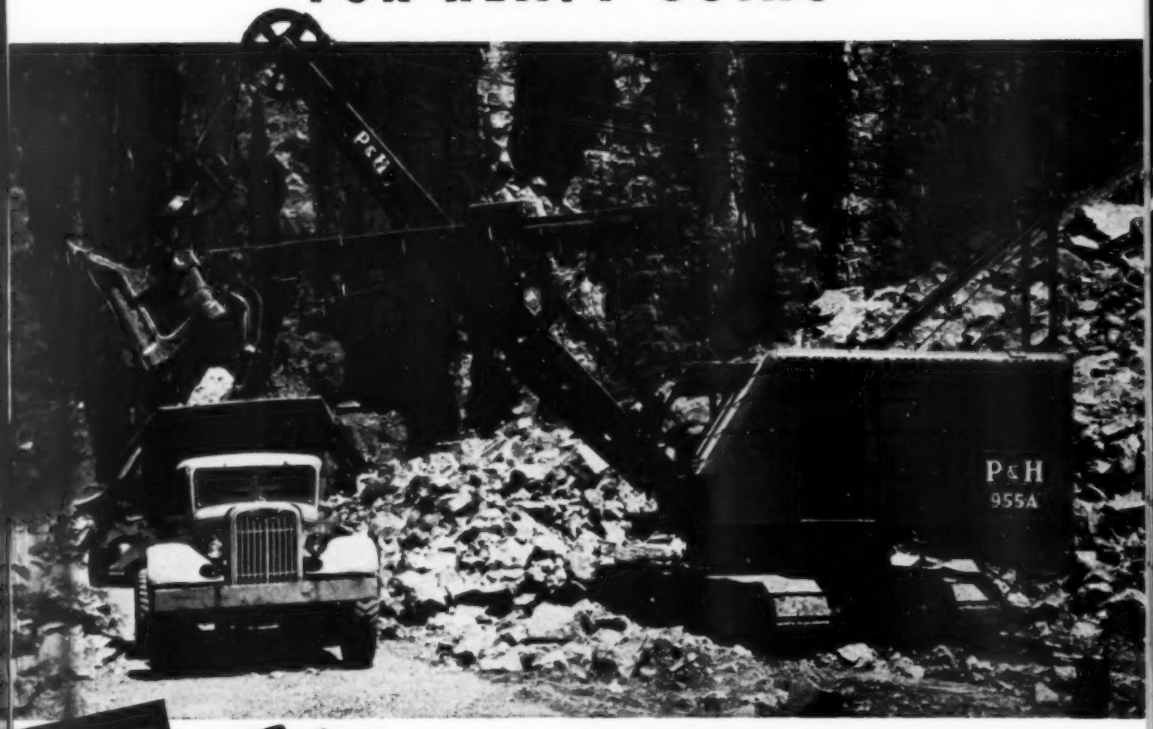
TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit . . . for every job

FREE BOOKLET! *A valuable guide for rock bit buyers. Shows and describes full line of bits. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".*

ROCK RATED!

FOR HEAVY GOING



P&H *Magnetorque**

SLICKEST SWING YOU'VE EVER KNOWN!

It's everything you've wanted for more profitable rock handling . . . It's the P&H 955-A (2½ yd. shovel) . . . newer . . . better . . . proving it where the going is heaviest. Here's why:

P&H MAGNETORQUE ELECTRIC SWING. The smoothest, slickest swing you've ever known . . . yours for the full life of your machine. Old style swing frictions are *out* . . . all their troubles, adjustment and replacement costs.

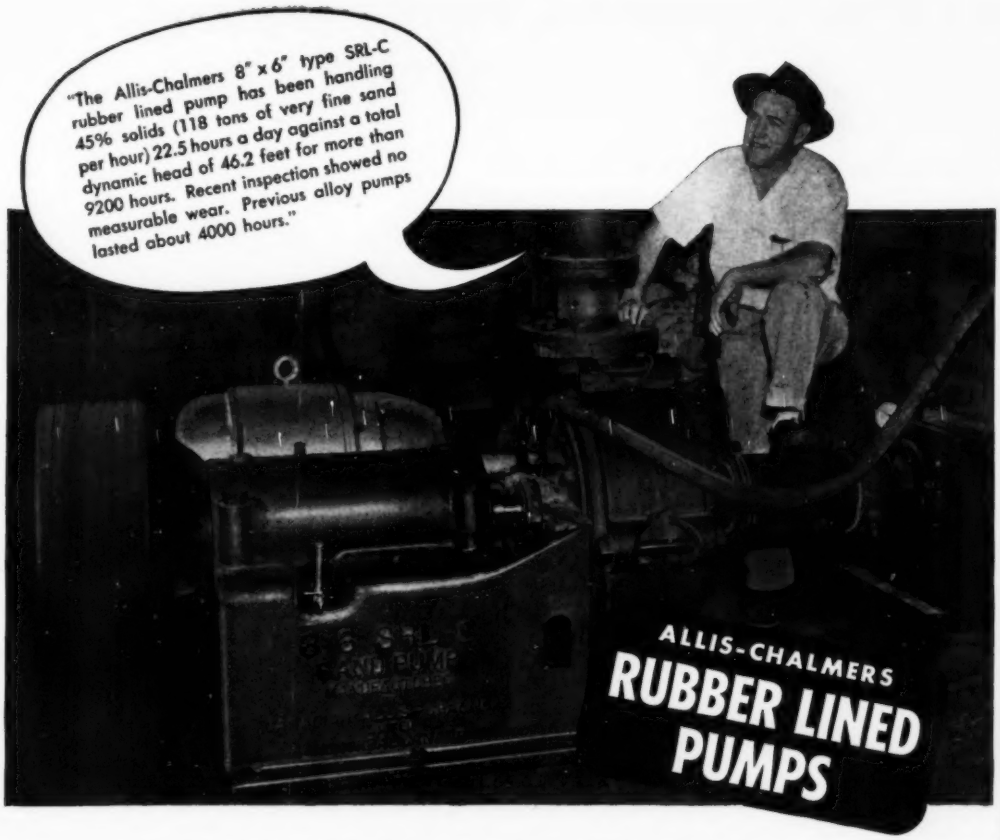
SMOOTHER OPERATION means less strain on machine and operator. **GREATER STABILITY** gives you increased digging ability. **ALL-WELDED** for maximum strength.

Ask to see the one working nearest you. It's the 2½ yd. version of the famous 1055 (3½ yd.).

P&H **EXCAVATORS**
4451 W. National Ave.
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS & ELECTRODES • SOIL STABILIZERS • CRAWLER & TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES


"The Allis-Chalmers 8" x 6" type SRL-C rubber lined pump has been handling 45% solids (118 tons of very fine sand per hour) 22.5 hours a day against a total dynamic head of 46.2 feet for more than 9200 hours. Recent inspection showed no measurable wear. Previous alloy pumps lasted about 4000 hours."
ALLIS-CHALMERS
RUBBER LINED
PUMPS

9200 HOURS HANDLING SAND

"No Wear"

HANDLING FLORIDA SAND mixed with rutile, ilmenite, zircon and monazite will grind any metal pump to pieces in short order. But this Allis-Chalmers rubber lined pump has been operating for more than a year with no measurable wear. 10 to 50 times the service life of the best metal alloy pumps is not an uncommon record.

Special Compounds Used

Rubber lining compounds are especially engineered for each application. Linings are bonded to steel frames and not to the pump body. Linings may be replaced without removing the pump from its location. The impeller is equally easy to remove and replace.

If you are pumping fine mesh, hard, abrasive materials (⅛" to 325 mesh size), you may find that an Allis-Chalmers SRL rubbed lined pump will mean longer life and lower costs per gallon pumped. Ask your nearby Allis-Chalmers District Office representative, or write Allis-Chalmers, Milwaukee 1, Wis. and ask for Bulletin 08B7311.

A-3476

ALLIS-CHALMERS

Proven • • • new types of

the rock buster

A powerful Impact type Primary Crusher for reducing hard friable material.

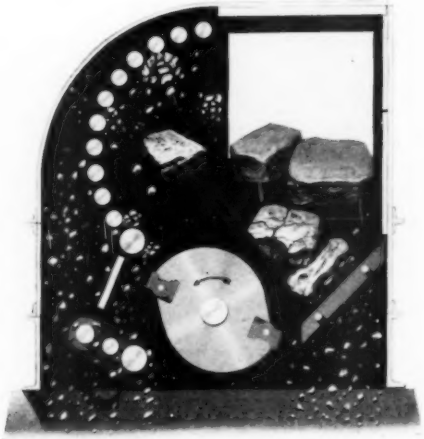
30" Feed	4" to 1" Product
Capacity	60 to 250 Tons per Hour

Reduces material while it is in suspension. High speed, Two-Ton Rotor equipped with stationary Breakers.

Material fed onto a sloping Grizzly of desired bar spacing.

Grizzly by-passes fines — directs oversize material into path of rotor.

Bulletin No. 827



reversible swing hammer

for large capacities — Minimum 'down-time'

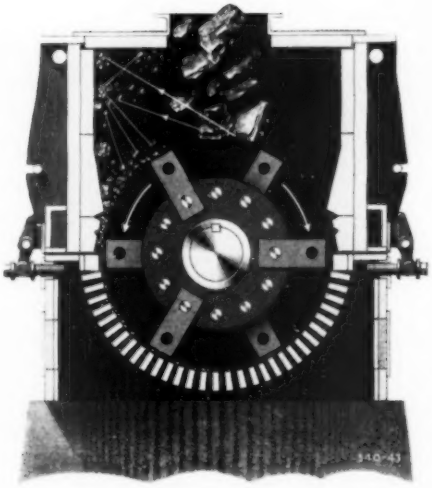
Product 85% – ½" and under

Machine is symmetrical about vertical center line.

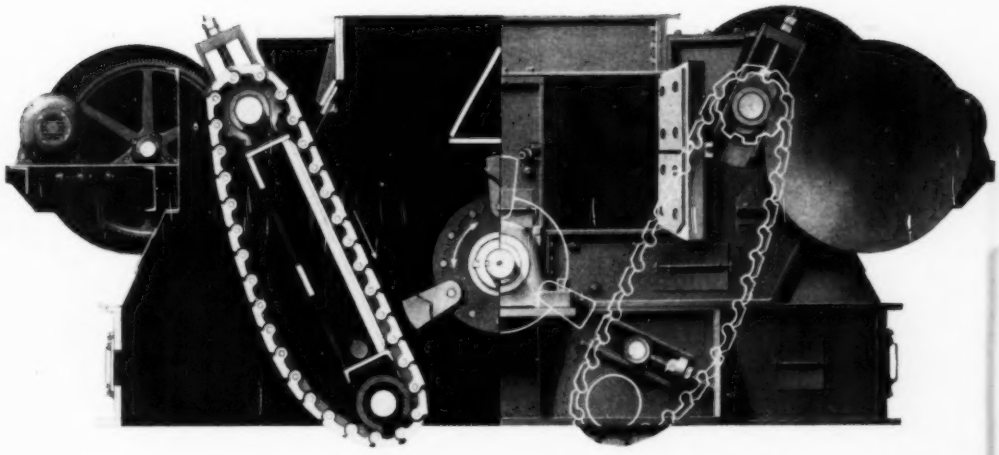
When one corner of hammers becomes worn, rotor direction is reversed to use opposite faces of hammers.

Extra heavy construction — welded plate steel — removable manganese liners — anti-friction bearings.

Catalog No. 837



Crushers for Cement Mills
. . . Stone Industry



mud hog . . . reversible . . with traveling breaker plates

for crushing wet sticky material — clay, shale, ores, cement rock, limestone and many chemicals.

30" maximum feed 4" to 1" Product

TWO Crushers in ONE — breaker plates adjustable for different size product — use one side for one product, opposite side for different product.

Reversing crusher is accomplished by simply reversing the motor through the starter.

Bulletin No. 811

We will be glad to go into detail — write us when you are ready for that BIG crushing job.

THE JEFFREY MANUFACTURING COMPANY
917 North Fourth St., Columbus 16, Ohio

Complete Line of Material Handling, Processing and Mining Equipment

RAYMOND Whizzer Type HIGH SIDE ROLLER MILL

This modern, fine grinding unit is used the world over as a standard mill for pulverizing a variety of non-metallic minerals. It will reduce many materials to finenesses ranging from about 60% minus 100 mesh to 99.9% or better passing 325 mesh.

This Unit offers definitely proven economies in production. It provides an automatic, dust-free, completely integrated system for grinding, separating and conveying materials, as well as removing surface moisture. These operations are all combined in a single, simultaneous process.

If you plan on producing non-metallic minerals in the medium or high fineness range, it will pay you to investigate the Raymond Roller Mill.

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PULVERIZER DIVISION

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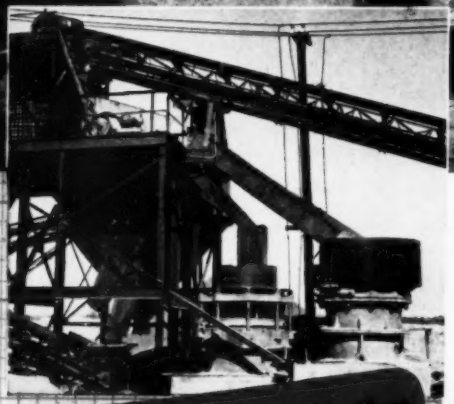
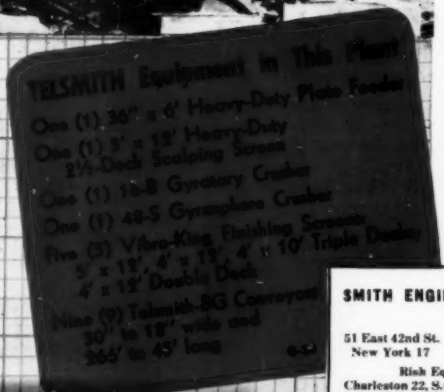
TELSMITH ENGINEERED

for High Capacity... and Super Flexibility




TELSMITH Equipment in This Plant
One (1) 36" x 6' Heavy-Duty Plate Feeder
One (1) 3' x 12' Heavy-Duty 3½-Deck Scalping Screen
One (1) 16-B Gyratory Crusher
One (1) 48-S Gyrasphere Crusher
Five (5) Vibro-King Finishing Screens 5' x 12', 4' x 12', 4' x 10' Triple Decks, 4' x 12' Double Deck
Nine (9) Telsmith-SG Conveyors 30" to 18" wide and 265' to 43' long

Barbers Corners Crushed Rock, Washed Sand and Gravel Plant of the Elmhurst-Chicago Stone Co., Elmhurst, Illinois. (Top) one of several Telsmith Vibro-King Screens; (left) Telsmith Scalping Screen, Gyratory and Gyrasphere Crushers.

FIVE-WAY EFFICIENCY — (1) High Capacity ... (2) Super Sizing-Flexibility ... (3) Simplified, Automatic Controls ... (4) Large Storage Capacity ... (5) Fast Truck-Loading ... makes this plant unique. Because it is not only Telsmith engineered but largely Telsmith equipped.

THREE-SECTION DESIGN — This outstanding sand and gravel plant can produce—In Section One, minus 1" pit-run road gravel. In Section Two, four sizes of washed gravel, and sand. In Section Three, five sizes of crushed gravel and one of aglime. This three-section plant consistently and economically produces 350 tons per hour.

CONSULT TELSMITH ENGINEERS for newest developments in aggregate production. Send for Bulletin 266.

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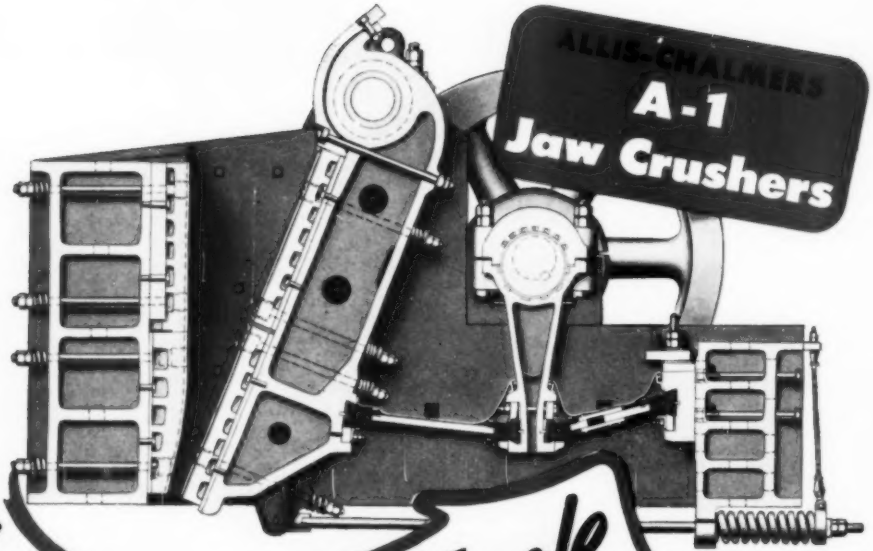
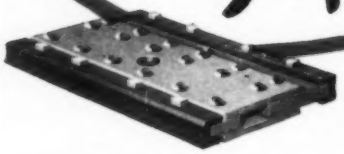


New Dry Rolling Toggle



Dry rolling toggle was developed by Allis-Chalmers for A-1 jaw crushers ...can be installed on other jaw crushers now in use.

The Allis-Chalmers representative in your area will be glad to give you complete facts about A-1 jaw crushers. Allis-Chalmers, Milwaukee 1, Wisconsin.

✓ Outlasts Conventional Toggles
✓ Reduces Maintenance Costs

NO LUBRICATION True rolling action of toggle ends and seats requires no lubrication. No oil lines or lubricant needed. No oil drip from toggles to pit below crusher. Increased safety and cleanliness!

ROLLING ACTION Replaces friction-producing sliding action. Toggle bearings are cold even after 16 hours of tough crushing!

LESS WEAR Rolling rather than sliding action between toggle ends and seats results in greatly reduced wear. Abrasive dust has little or no destructive effect.

LASTS LONGER Improved toggle is safety shear type. Only inexpensive rivets shear off when unbreakable materials enter the crushing chamber. No need to replace the whole toggle! Rivets can be replaced easily in the field.

A-1 and Pulverator are Allis-Chalmers trademarks

A-3517

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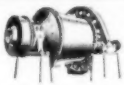
Pulverators

Vibrating Screens

Jaw Crushers

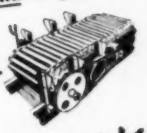

Grinding Mills

Gyratory Crushers

Kilns, Coolers, Dryers

To screen rock, you need the right kind of grizzly

this



not this

Same way with trucks. Get one that fits the job!

Profit from the extra power and dependability of DODGE "Job-Rated" TRUCKS

Because there's a Dodge truck that's "*Job-Rated*" throughout for *your* pit or quarry operation, you can depend on Dodge for hauling rock products at lower cost.

For example, you'll find that the new high-tonnage Dodge "*Job-Rated*" trucks are up to 20% more powerful than before! These big, rugged "work horses" ($2\frac{3}{4}$ tons and up, including 6-wheelers) are exceptionally *economical*, too . . . offering such advanced, money-saving features as a twin carburetion and exhaust system.

Whatever you carry—rock, stone, gravel or sand—you'll be able to haul bigger payloads without danger of overloading. What's more, these Dodge "*Job-Rated*" models offer new ease-of-handling, positive safety, and year-after-year dependability.

See your Dodge dealer soon! Let him show you a "*Job-Rated*" truck that *fits* your particular pit or quarry operation.

How Dodge trucks are "*Job-Rated*" for pit and quarry operations

A Dodge "*Job-Rated*" truck is engineered *at the factory* to fit a specific job . . . save you money . . . last longer.

Every unit from engine to rear axle is "*Job-Rated*"—factory-engineered to haul a specific load over the roads you travel and at the speeds you require.

Every unit that SUPPORTS the load—frame, axles, springs, wheels, tires, and others—is engineered right to provide the strength and capacity needed.

Every unit that MOVES the load—engine, clutch, transmission, propeller shaft, rear axle, and others—is engineered right to meet a particular operating condition.

"Job-Rated" TRUCKS DO THE MOST FOR YOU

VOL. 44 DECEMBER 1951 No. 6

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

PIT AND QUARRY

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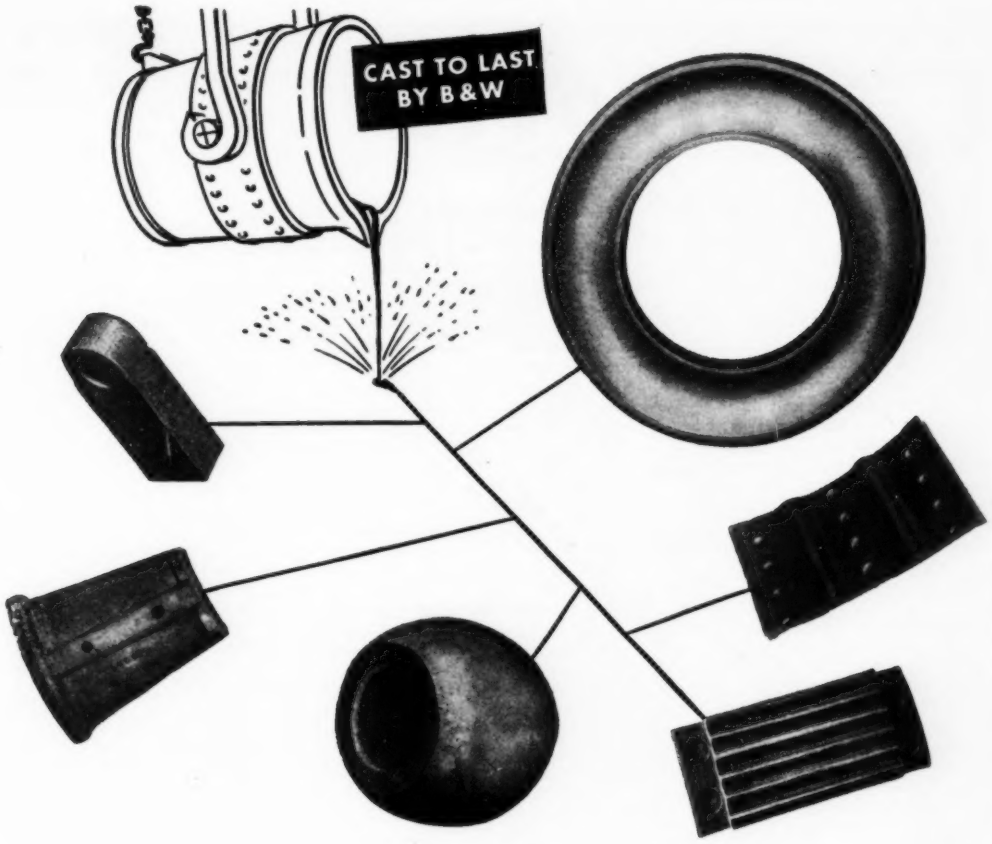


Service-proved AIDS to low-cost grinding

B&W chilled iron and alloy steel wear-resistant castings have a long and favorable service record as vital parts of widely-used types of grinding equipment. Because they are CAST TO LAST under all kinds of abrasive conditions encountered in rock products plants, liners, roll heads, slugger plates and other B&W wear metal castings keep grinding and crushing equipment on the job . . . prevent unscheduled shutdowns for costly, time-consuming repairs and replacements. Secret of their superlative service life is the unique properties of B&W Elverite A and Elverite C chilled irons, and B&W Steel Alloy 5202. Each has distinct advantages for specific operating requirements of strength and abrasion resistance. Let B&W pour longer life into your next order of wear-resistant castings for new equipment or renewals. Chances are our large pattern stock includes your designs.

BABCOCK & WILCOX

6-517

editorial

Attend Your Industry's Convention

JUST ahead are the most important conventions of 1952 for several of the major nonmetallic minerals industries, including agricultural limestone, sand-and-gravel and crushed stone, and the related ready-mixed concrete and concrete products industries. Details are not yet available on the programs for most of these meetings, but we have assurance that they will exceed the high standards set in previous years. All important subjects affecting these industries will be thoroughly discussed by authorities from inside and outside the industries. The machinery exhibitions to be held in conjunction with several of these conventions will be larger and more complete than ever before. Well balanced programs of entertainment have also been arranged for those attending and for the ladies.

The conventions referred to, in the order in which they will be held, are those of the National Agricultural Limestone Institute, Statler Hotel, Washington, D. C., January 15-17, 1952; the National Sand and Gravel Association and the National Ready Mixed Concrete Association (with a joint machinery exhibition), Conrad Hilton (formerly Stevens) Hotel, Chicago, Ill., February 11-15, 1952; the National Crushed Stone Association, with a concurrent machinery exhibition, Conrad Hilton Hotel, Chicago, February 18-20, 1952; the National Concrete Masonry Association, the New Yorker Hotel, New York, February 18-20, 1952. All producers, whether or not they are members, are invited to attend these meetings except in the case of N. C. M. A., where attendance is limited to members and invited guests.

Record-breaking attendance at all these conventions is assured, due in part to the rapid growth in the membership of these associations, indicating a growing awareness of their importance to the industries and to individual producers. Associations can do for producing companies many things that they cannot do for themselves. Business in the nonmetallic minerals and affiliated industries is becoming more and more complicated in all its phases, and few producers are able to solve for themselves the innumerable problems constantly developing with respect to labor, taxes, obtaining equipment, costs, prices, wages, specifications, etc. Associations are among the best sources of specialized information on these important subjects. For those meetings having exhibits this is a strong additional inducement, and the central location of the meetings held in Chicago will help to swell their attendance.

THE programs for the above conventions are, as we have previously stated, not yet available in all cases in completed form, but we can assure producers that all timely and important subjects of interest to them will be discussed by well-informed authorities on these subjects. Speakers will include top association executives and technical directors; government bureau heads; research, legal, and business experts; top-flight producers, and others. Many types of problems affecting producers in these fields will be analyzed and discussed. The latest and best available information will be presented on business conditions and future prospects (locally and nationally both for industry in general and these industries in particular), governmental actions and regulations, labor, legal matters, equipment, material, labor and car supply, methods of operation, specifications, availability of equipment and raw materials, costs, prices, etc. All speakers are prepared to answer questions from the floor at the conclusion of their addresses.

Open forums on various subjects have become established features at these conventions and more and more time is being devoted to them. This is particularly true of the forums on operating problems which are always among the most interesting and best-attended sessions. These forums are open to all and are informal, friendly affairs in which the discussion is guided by experts in these fields but in which everyone can participate. The operating forums have in recent years invited more active participation by the representatives of machinery manufacturers, who are in many cases experts in their fields with a wide perspective of operating problems that few producers can acquire. Nowhere else can a producer get free access to the combined knowledge and experience of so many experts on so many different subjects.

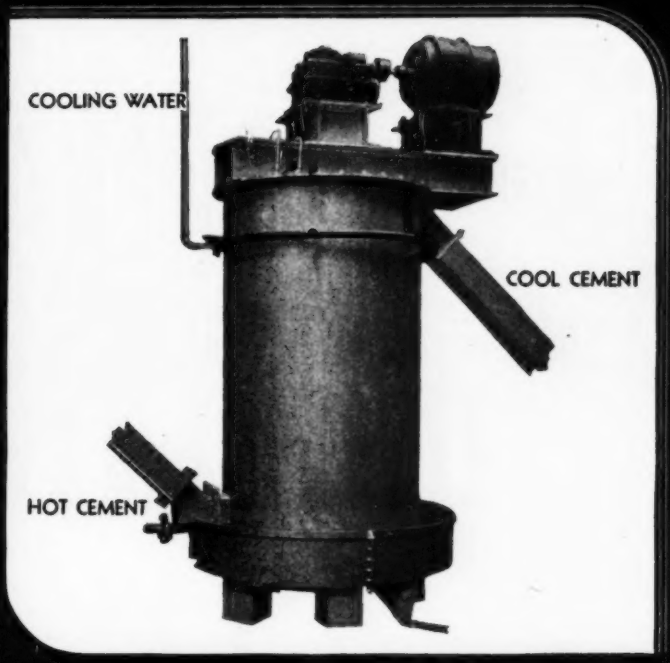
THE machinery exhibitions to be held in conjunction with the sand and gravel, ready-mixed concrete, and crushed stone conventions will be far larger than ever before, and we are informed that they will also be more complete, interesting, and educational. At this writing the number of exhibitors for the combined N. S. G. A.—N. R. M. C. A. show has reached a total of 83, which is considerably ahead of the previous record set at the last show in 1950. The latest total for the N. C. S. A. show is 66, which also exceeds the 1950 record figure. Each participating company promises to have a more complete exhibit than ever before, including full-size operating units wherever possible. The best engineering and sales talent of each company will also be present to serve the record crowds of producers who will attend these shows. Although the other associations will not have exhibits, there will be large representations of machinery men.

The complete official program of the convention of the National Agricultural Limestone Institute is published in the news section of this issue. The programs of the N. S. G. A., N. R. M. C. A., and N. C. S. A. conventions mentioned above are not yet available but will be published in the January Annual Review and Forecast Number of PIT AND QUARRY, together with layouts of their exhibits which will be keyed with lists of exhibitors to identify their locations. The program of the N. C. M. A. convention will be in the CONCRETE MANUFACTURER section of the January issue.

Attendance at the annual convention of the association covering your industry is a must, whether or not you are now a member. Make your plans to attend now and write for your hotel reservations at once.

Walter E. Trauffer

FOR COOLING HOT CEMENT



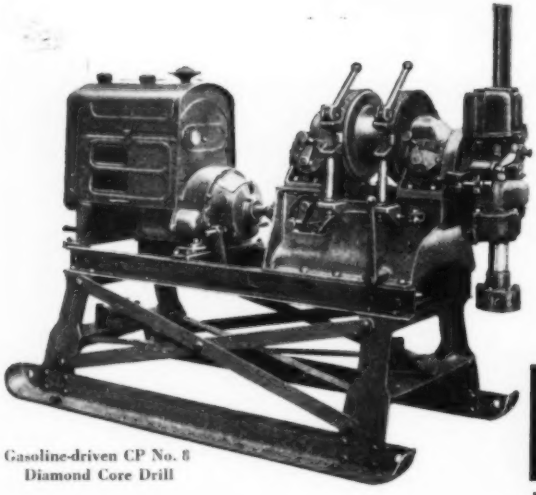
Cement manufacturers are frequently confronted with the problem of cooling hot cement to temperatures acceptable when making bulk shipments or for immediate packing in paper bags. The FLS Cement Cooler was especially developed for cooling hot cement. • The FLS Cooler consists of a tank, water-cooled externally, the cement being introduced into the bottom and conveyed in a thin layer along the inside of the water-cooled wall to the top, where it is discharged. Thus an intimate contact is established between the cement and the water-cooled surface, assuring high-cooling efficiency. • In addition to cement, the Cooler is applicable to many other similar dry pulverized materials.

F. L. SMIDTH & CO.

Designers of Cement Making Factories, Manufacturers of Machinery for Making Cement and Lime, etc.

11 WEST 42nd STREET NEW YORK, N. Y.

FOR EXPLORATORY DRILLING



Gasoline-driven CP No. 8
Diamond Core Drill

For exploring quarry sites or possible extensions of present sites, the gasoline-driven CP No. 8 DIAMOND CORE DRILL is ideal. Ruggedly built, skid mounted, readily moved from hole to hole under its own power.

Drilling at the continuous high speed made possible by bortz bits, the CP No. 8 gives exceptional performance with remarkably low maintenance. With E-EX Fittings it has a capacity of 900 feet.

For still deeper drilling, the CP No. 15 provides a capacity of 1750 feet. Both the No. 8 and No. 15 are also available with Diesel-drive.

Write for Bulletin No. 313

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 8 East 44th Street, New York 17, N. Y.

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news of the industry

PIT AND QUARRY

Ideal-Pacific Exchange Of Stocks Is Approved By Ideal's Stockholders

At a special stockholders' meeting of the Ideal Cement Company in Denver on October 23 the following resolutions were adopted:

Authorizing the increase of the company's capital stock from 1,500,000 to 2,000,000 shares.

Adopting a plan of reorganization under which Ideal would offer to stockholders of the Pacific Portland Cement Company an exchange of Ideal stock on the basis of one share of Ideal for each two of Pacific. In order to make the exchange tax-free, 80 percent of Pacific's stock would have to be tendered. If this is done and the exchange is completed, Ideal will operate Pacific Portland as a subsidiary.

Authorizing an increase in the board of directors from 9 to 13. The four new places will not be filled until the annual meeting of stockholders, which will be held probably in April, 1952.

According to an Ideal spokesman, company stockholders in general were enthusiastic about this development, since 82.7 percent of Ideal stock, as evidenced by proxies in the hands of the secretary, had been filed favorably.

Before Ideal can make the offering to Pacific stockholders, it will be necessary to file with the Securities and Exchange Commission a registration certificate covering 250,000 shares involved.

Missouri Crushing Plant Hit by $25,000 Fire Loss

Fire swept through a three-story building of the Sugar Creek Building Material Company, Sugar Creek, Mo., on the night of October 25, causing estimated property and machinery damage of $25,000. The plant, which contained equipment for quarrying and rock-crushing, and the quarry site are owned by Charles Rove, Joseph Danubio, and Mrs. Santa Follina, who have operated the business since 1942.

The blaze was reported to have been caused by an explosion of a fuel oil tank in the engine room. Besides destruction of the building and adjoining elevator apparatus, damage included the loss of two large power motors, an air compressor, two rock crushers, and wooden bins for crushed rock. Two heavy trucks and a high-loader were also damaged.

No attempt was made by firemen from the Sugar Creek department to fight the blaze. Guy Smith, watchman, who heard the explosion, said he called the Sugar Creek fire department and was informed the blaze was outside the jurisdiction of the district.

J. W. Etchison recently sold the Etchison Stone Company at Casey, Ill., to Casey Stone Company, Inc., after having conducted the business for the last 40 years.

"Send Scrap to Mills" Chapman Urges Industry

Warning that the biggest threat to increased steel production is the shortage of scrap, Secretary of the Interior Oscar L. Chapman has appealed to domestic mine and mill operators to do their part in seeing that all available scrap in their mines and plants will be sent to steel plants.

The Defense Minerals Administration suggested that each mine or mill operator appoint one man to see that the scrap is sent promptly on its way to the steel mills.

Coming Events

January 15-17, 1952—Washington. Annual convention, National Agricultural Limestone Institute, Inc. Hotel Statler.

January 21-24, 1952 — Houston. Golden anniversary meeting, American Road Builders Association. Rice Hotel.

January 27-31, 1952 — Chicago. 33rd annual meeting, Associated Equipment Distributors. Conrad Hilton (formerly Stevens) Hotel.

February 5 and 6, 1952—Jefferson City. Seventh annual convention, Missouri Limestone Producers Association. Governor Hotel.

February 11, 1952 (week of)—Chicago. 36th annual convention and exhibit, National Sand and Gravel Association. Conrad Hilton (formerly Stevens) Hotel.

February 11, 1952 (week of)—Chicago. 22nd annual convention and exhibit, National Ready Mixed Concrete Association. Conrad Hilton (formerly Stevens) Hotel.

February 18-20, 1952 — Chicago. 35th annual convention and exhibit, National Crushed Stone Association. Conrad Hilton (formerly Stevens) Hotel.

February 18-20, 1952—New York. 32nd annual convention, National Concrete Masonry Association. Hotel New Yorker.

February 18-21, 1952—New York. 79th annual meeting, American Institute of Mining and Metallurgical Engineers. Hotel Statler.

February 26-28, 1952—Cincinnati. 48th annual convention, American Concrete Institute. Netherland Plaza Hotel.

February 27 and 28, 1952—Chicago. Third annual convention and meeting, American Concrete Pressure Pipe Association. Drake Hotel.

February 28- March 1, 1952 — Chicago. 44th annual convention and meeting, American Concrete Pipe Association. Drake Hotel.

March 3-5, 1952—Denver. Second annual convention and meeting, American Concrete Agricultural Pipe Association. The Brown Palace Hotel.

March 5 and 6, 1952—Des Moines. Seventh annual convention, Iowa Agricultural Limestone Association, Inc. Savery Hotel.

Sept. Building Awards Fail to Reach August Level But 9-Month Total Is High

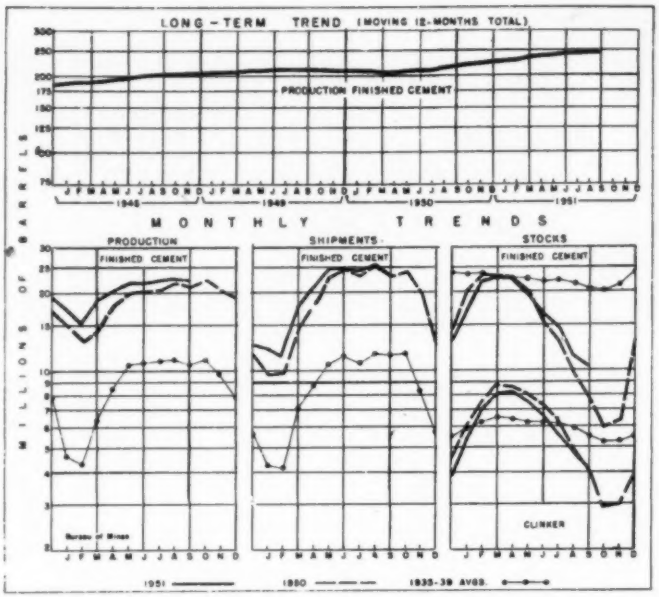
The downtrend in dollar volume of construction contracts awarded in the 37 states east of the Rockies, first evidenced in F. W. Dodge Corporation's August figures, continued its pattern during September.

The predicted over-all drop due to defense limitations on the building field showed itself in the September award total of $1,082,855,000, which was a decrease of 14 percent from August and a drop of 16 percent from September, 1950.

Meanwhile, the nine-month 1951 total of awards reached $12,533,605,000 or 13 percent more than the comparable 1950 figure, and moved the year's huge total closer to last year's standing peak total of $14,500,000,000.

Non-residential awards in September were $404,462,000 or 15 percent lower than August and 19 percent below September, 1950. Residential contracts at $479,716,000 were 15 percent less than in August and 13 percent behind the September, 1950, total. Public and private works and utilities at $198,677,000 were down 9 percent from August and down 17 percent from September of last year.

Nine-months totals, as compared with nine months a year ago, were as follows: non-residential, $5,483,598,000, up 43 percent; residential, $4,919,153,000. down 6 percent; public and private works and utilities, $2,130,855,000, up 4 percent.



SUMMARY—Production of finished portland cement in September, 1951, totaled 22,269,000 barrels, as reported to the U. S. Bureau of Mines, representing a 6 percent increase over the September, 1950, figure. Mill shipments totaled 23,256,000 barrels—an increase of 2 percent over shipments in September, 1950, while stocks of 10,290,000 barrels of finished portland cement were 35 percent greater than those of a year ago. Clinker production during the month was 7 percent greater than in September, 1950, and amounted to 21,650,000 barrels.

PRODUCTION—154 plants located in 36 states and Puerto Rico reported a production of 22,269,000 barrels of finished portland cement during the month, as compared to 150 plants which manufactured 20,945,000 barrels in September, 1950. Clinker production during the month totaled 21,650,000 barrels, 7 percent greater than in the preceding September.

SHIPMENTS—Mill shipments of finished portland cement increased 2 percent over the total reported for September, 1950. Shipments were greater in 12 districts and lower in 7 districts, as compared to shipments in September, 1950. The percentage changes range from a 30 percent increase in the Virginia-Georgia-Florida-Louisiana-South Carolina district to a 17 percent decrease in the Oregon-Washington district. Iowa showed a 17 percent gain, and Ohio followed with a 13 percent increase.

STOCKS—Mill stocks of 10,290,000 barrels of finished portland cement were reported for September, 1951, a 35 percent increase over the September, 1950, figure. Clinker stocks totaling 4,111,000 barrels were 2 percent higher than at the same time last year.

Agricultural Limestone Assn. Of Iowa Plans 7th Meeting

Clint A. Allen, executive secretary of the Iowa Agricultural Limestone Association, Inc., has announced that plans for the organization's seventh annual convention at Des Moines on March 5 and 6 are under way. Arrangements for speakers and entertainment are being made, and it is anticipated that the meetings, to be held at the Savery Hotel, will be eminently worthwhile.

Mr. Allen stated that additional information about the convention will appear in forthcoming issues of the *Ag-Lime-O-Gram*, the association's regular news letter. He especially urged that members bring their wives to Des Moines.

Lawrence Portland Cement "Doing Okay," Says Dragon

In the October-November issue of *The Lawrence Dragon* a set of statistics show some interesting facts concerning the Lawrence Portland Cement Company's sales, net income, net income per share, and other financial data from 1946 to 1950.

In 1946 net sales amounted to $3,785,447; in 1950 the total was $8,539,277. The 1946 net income stood at $94,582; in 1950 it was $907,068. While the net income per share was $.42 in 1946, it had climbed to $4.03 in 1950, and dividends paid per share rose from $.42 in 1946 to $1.50 in 1950.

Latest statistics for the firm, 12 months ended September 30, 1951, show net sales of $9,699,930 and net profit of $913,358.

Pennsalt, Sharples Announce Agreement on Stock Trade

Managements of the Pennsylvania Salt Manufacturing Company and Sharples Chemicals, Inc., have announced that they have entered into an agreement whereby Pennsalt common stock will be offered in exchange for Sharples common stock at the rate of 5.15 shares of Pennsalt for one share of Sharples. It is expected that the offer will be made the latter part of December.

In announcing the exchange plan, officers of the two companies pointed out that combining the two businesses will further diversify both. Pennsalt has been engaged principally in the manufacture of inorganic chemicals, but in recent years has been extending its activities into the organic field. Sharples Chemicals has specialized in synthetic organics, none of which is presently marketed by Pennsalt.

Among the principal raw materials required for Sharples products are chlorine, caustic soda, and ammonia, which for many years have been purchased from Pennsalt by Sharples. It was to obtain these Pennsalt products that Sharples located its plant adjacent to Pennsalt's Wyandotte, Mich., works in 1932.

Union Pulverizing Corporation Moves Anna, Ill., Plant to Omaha

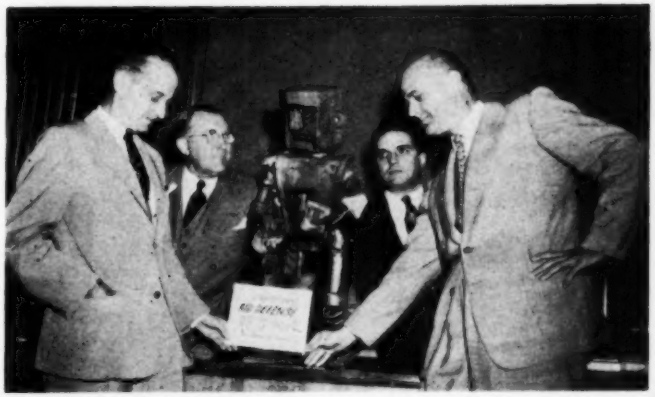
The Union Pulverizing Corporation of Anna, Ill., has dismantled its facilities and equipment, and moved them to the company's Omaha, Neb., plant, according to the manager, Wilbur Clark.

The plant at Anna was built in 1949 to manufacture pulverized limestone suitable for agricultural use and for brick and concrete blocks.

Scrappy's in Washington To Aid National Drive For Industrial Scrap

"Scrappy", a plastic-cloth model of the symbol of a nationwide advertising campaign to "get out the scrap", has gone to Washington to help launch an important defense drive. At the same time business and industrial publications, through the Business Paper Advisory Committee of The Advertising Council, are opening the first phase of a volunteer campaign to dig out the scrap of today which will become the steel of tomorrow.

"Steel is king; and scrap is crown prince," said Charles E. Wilson, the nation's mobilization chief. Manly Fleischmann, NPA administrator, has warned that "The whole success or failure of the mobilization effort may depend upon our ability to solve the scrap problem." This year alone the steel industry will need 36,000,000 tons of scrap to keep pace with the nation's military requirements and still maintain reasonable civilian production.



• With "Scrappy" are R. D. Mossman, Jones & Laughlin Steel Corp., and volunteer coordinator of the Advertising Council's campaign; C. E. Wilson, director, Office of Defense Mobilization; Manly Fleischmann, administrator, National Production Authority; and T. S. Repplier, president, Advertising Council.

California Materials Company Honors Old-Timers at Dinner

At a dinner attended by more than 100 in Sun Valley, Calif., the California Materials Company management honored old-timers among its employees. Fifteen of the feted guests had been with the firm for ten years or more; 24 had been working for the company for at least five years. Other old-timers had records covering 11 to 16 years.

Participating in the program were H. G. Feraud, secretary of the Southern California Rock Producers Association and secretary of the Ready Mix Concrete Association; L. E. Bancroft, vice-president and manager of the California Portland Cement Company; John D. Gregg, president of California Materials; and other local notables. Mr. Gregg stated that the aggregate of service records of the firm's 90 employees amounted to 439 years.

Canadian Johns-Manville Co. To Modernize Facilities

Canadian Johns-Manville Company, Ltd., is planning a five-year expansion and modernization program for its Shipton Township, Quebec, processing plant and its Jeffrey asbestos mine at Asbestos, Quebec.

According to Premier DuPlessis, the company will spend approximately $14,000,000 on the program. Plans call for replacement of the existing Shipton plant, which is old and relatively obsolete, with a new 500,000-ton per year unit. At Asbestos, the company plans to widen the existing shaft and to sink a second shaft.

It has been reported that a feldspar flotation plant under construction at Spruce Pine, N. C., for the Carolina Mineral Company is nearing completion. This plant will have a capacity of 150 to 200 tons of alaskite a day.

Winners Get Trophies, Honors In Natl. Slag Assn. Safety Race

Highest safety honors were awarded to the Wylam open-hearth plant of the Birmingham Slag Company at Birmingham, Ala., and the Donora plant of the France Slag Company at Donora, Pa., in the second annual National Slag Association Safety Competition, conducted by the U. S. Bureau of Mines. The bronze plaques, provided by PIT AND QUARRY, were won by these plants for having the best safety records in the two groups of slag plants in the competition. In addition to the trophies, each employee and official of the two winning plants has been awarded a Certificate of Accomplishment in Safety by the Bureau of Mines in recognition of his individual contribution to the outstanding record of the plant.

Group A—Plants Working 60,000 or More Man-Hours—The Wylam open-hearth plant of the Birmingham Slag Company won the trophy in this plant group. Its winning record was the outstanding accomplishment of being operated for 78,771 man-hours without any disabling injuries. The record of this operation during the 1949 contest was nearly as outstanding, when only one temporary injury with one day of disability prevented the recording of an injury-free year. It is evident from its accomplishment in 1950 that the men and officials of this plant have worked to eliminate even the very minor injuries in their daily work. The trophy award in the 1950 contest was the second successive award to a plant of this company; the Thomas plant at Birmingham had the best record in this group in the 1949 contest.

Three other plants in the 1950 contest in this group achieved perfect safety records in their operations during the year from April 1, 1950, through March 31, 1951. These plants were ranked second, third, and fourth in the contest in order of their man-hours of exposure during the year's operations.

Group B—Plants Working Less Than 60,000 Man-Hours—The Donora plant of the France Slag Company has the best safety record in the second group—a perfect safety record of no lost-time injuries during a total operating time of 51,275 man-hours during the 1950 contest year. It is notable that a plant of this company won similar honors in this group in the 1949 contest, in which the Chicago plant won the trophy.

In the competition for top safety honors in this group, ten other slag-producing plants had perfect safety records for the year. However, the record of the Donora plant was the best, as it had the largest total of man-hours of exposure without any disabling injuries.

Injury-Free Operations — Employees and officials at 15 of the 39 competing slag producing operations in the 1950 contest achieved the outstanding safety records of operating throughout the year without any lost-time injuries. Men at these 15 plants, of which two were trophy winners, worked an aggregate of 594,329 man-hours or 20 percent of the 2,943,489 man-hours worked in all the enrolled plants. The achievement of injury-free records at any plant shows clearly what can be done through the close cooperation of employees and officials in effective and well-designed safety programs.

The following plants, excluding the trophy winners, were awarded Certificates of Achievement in Safety by the Bureau of Mines. They compiled injury-free records and were worked 20,000 or more man-hours during 1950. In addition, there were four injury-free plants which did not receive certificates because

(*Continued on page 71*)

Frank T. Sheets of P.C.A., Authority on Highways, Dies in Chicago Hospital

Frank T. Sheets, 61, president of the Portland Cement Association since 1937 and nationally known highway engineer, died unexpectedly on November 3 in Passavant Hospital, Chicago.

When Mr. Sheets joined the association in 1933 as a consulting engineer, he had a background of 12 years as chief highway engineer and superintendent of highways for the state of Illinois. For four years prior to his election as president of the association he served as consulting engineer and director of development for the P.C.A.

Under his leadership as director of development, a number of important technological advancements were made in the fields of portland cement and concrete. Outstanding among these were the development of soil-cement for paving light traffic roads and streets, and the tilt-up method of construction.

Mr. Sheets was instrumental in promoting the long-term study of cement performance in concrete to observe the behavior of portland cement in concrete under many varying conditions of climate, soil and water. Started in 1940, the long-term study will continue indefinitely to provide information which will make possible even greater durability, strength, and long-term economy in concrete structures of all kinds.

The 14 years during which Mr. Sheets served as P.C.A. president were marked by many important accomplishments. It was during this period that the association built a $3,000,000 laboratory which stands today as the largest and the most completely equipped in the world devoted exclusively to do research in cement and concrete. Just a few months ago work was completed on the rebuilding of the association's general headquarters building at 33 W. Grand Avenue in Chicago.

Also under the leadership of Mr. Sheets, the association organized a continuing program of national advertising and public relations. He materially strengthened the association by attracting to its staff many outstanding men in every field in which the association carries on its research and promotion activities. His interest and confidence in young people was an important factor in this program. During his tenure as president of the P.C.A., Mr. Sheets had an important part in the adoption of highway planning on a national scale and the development of the highway program of the Automotive Safety Foundation.

Born in Lafayette, Ohio, in 1890, Mr. Sheets moved with his family to Springfield, Ill., when he was 15 years old. After graduating from high school Mr. Sheets started to work in the Illinois Department of Highways. He worked his way through college, being employed by the State Highway Department during the summer. At the completion of his college course he entered the Highway Department and served as assistant engineer, assistant bridge engineer, assistant maintenance engineer, bridge engineer, engineer of design, and finally superintendent of highways and chief engineer.

Frank T. Sheets

Mr. Sheets served as president of the American Association of State Highway Officials, of the Mississippi Valley Highway Conference, and of the Central Illinois section of the American Society of Civil Engineers. He was an official delegate from the United States Government to the Pan-American Highway Congress at Rio de Janeiro in 1929.

His experience in the highway field covered practically all phases of highway financing, design, construction, maintenance, and administration. During the 12 years ending January 1, 1933, he directed expenditure of over $450,000,000 for highway and bridge construction and maintenance, and supervised the construction of approximately 11,600 miles of highways in Illinois, of which 8,356 miles were high-type primary roads.

Mr. Sheets was the author of *Concrete Road Design, Simplified and Correlated with Traffic*, presenting sound and simplified methods of designing pavements to meet traffic expectancy. An outstanding public speaker, he was frequently invited to talk on a wide variety of engineering subjects.

National Gypsum Announces First Stock Dividend

First stock dividend to be declared by the National Gypsum Company was one of 2 percent, announced with the regular quarterly dividend of 35 cents on common, both payable on December 15 to stock of record November 30.

Spokesmen indicated that the stock dividend will be on a basis of a full share for each 50 held, with fractional shares getting script certificates. It was stated that the stock dividend declared was designed to "maintain surplus cash."

H. C. Maginn Honored By Calaveras Executives On 25th Anniversary

H. C. "Pat" Maginn, executive vice-president and chairman of the management committee of Calaveras Cement Company, was honored recently at a luncheon of company executives upon his completion of 25 years in the service of the firms.

William Wallace Mein, founder of the company and chairman of the board, presented Mr. Maginn with a traveling bag in commemoration of the anniversary.

Mr. Maginn joined the company in 1926 in the Sacramento Valley territory, where in a short time he established Calaveras as the leading cement brand. He soon became sales manager, and in 1941 was elected a vice-president. Last April he was advanced to the newly-created office of executive vice-president, retaining his management committee post.

One of the best-known personalities in the Western construction field, Mr. Maginn served as a member of the Civilian Production Administration Board during World War II and the post-war years. He has been a director of the Northern California chapter of the Associated General Contractors for more than a decade, and serves also as chairman of A.G.C.'s Military Affiliation Committee.

Sulphur Supply Dwindling As Prospecting Continues

Now that the nation's sulphur stocks are nearing a "critical level", Langbourne M. Williams Jr., president of the Freeport Sulphur Company recently urged a realistic approach to the shortage, which requires that "the total amount of sulphur which producers are ordered by the government to ship must be limited to the amount of sulphur being produced". Any other course, Mr. Williams declared, would amount only to cutting into essential inventories.

Among current attempts to bolster the diminishing sulphur reserves are explorations being carried on in various sections. At Thermopolis, Wyo., a five-man crew began working on a joint operation of the U.S. Bureau of Mines and Kenneth Porter, who has been affiliated with the Sunlight sulphur project at Cody, Wyo.

Another deposit was reported in Lake County, Calif., about 150 miles northeast of San Francisco. According to Raymond Palmer, sulphur engineer, the main body of the deposit, known as Sulphur Hill, covers about 120 acres. Test holes indicated an average of approximately 60 percent elemental sulphur.

It was stated that the material will be mined, crushed, and screened to produce a 60 percent to 70 percent elemental sulphur for use in agriculture. The Chemi-Cal Sales Corporation of Beverly Hills, Calif., has announced its appointment as sole selling agent for the entire output, both for domestic and export sales.

U.S. Bureau of Mines To Issue Monthly Report On Nation's Lime Output

The following announcement has been issued by Robert S. Boynton, general manager of the National Lime Association:

"In view of the present national emergency, it is important that accurate monthly statistics on lime shipments are available for government and industry use. Monthly figures have been collected and published by the National Lime Association (see chart below) for more than 20 years. However, the Board of Directors of the N.L.A. decided that an independent agency was preferable. A poll of the industry was overwhelmingly in favor of asking the U. S. Bureau of Mines to provide this statistical service.

"The principal reason for making this change is that greater industry participation can be achieved, the resulting report being more comprehensive and accurate. Furthermore, government defense agencies like the DPA, NPA, OPS, and DMA generally prefer government statistics when these are available, in contrast to private industry figures.

"Consequently, we ask all lime companies — those which have cooperated with us in the past and those who have not—to participate in this new monthly lime statistical service which the U. S. Bureau of Mines is inaugurating. We hope you will answer the monthly questionnaires promptly and completely. Remember, the greater the response, the more valuable the report. Also, needless to say, this government agency will treat all individual figures in strict confidence.

"Let us all pull together to make this new Bureau of Mines service a real success."

International Minerals Boom, Stock Acquisition Announced

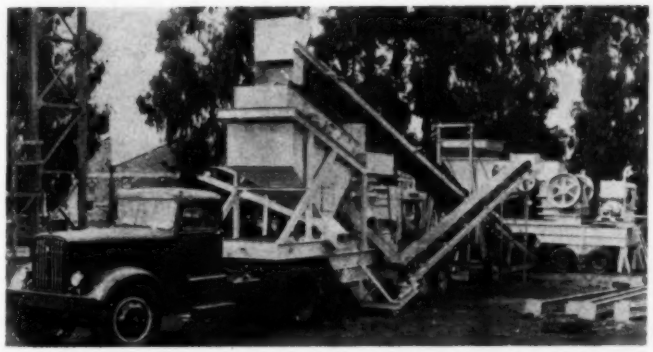
In a forecast made recently by Louis Ware, president of the International Minerals and Chemical Corporation, it was indicated that the concern may make substantially higher sales and earnings in the current fiscal year than in the year ended last June. (Last year sales were $66,257,884; earnings, per share, $3.06.) International this year will produce about 25 percent of the national total of 1,300,000 tons of potash.

Mr. Ware and International directors announced approval of a plan for acquiring all outstanding stock of the Hoover and Mason Phosphate Company through an exchange of shares. It was stated that the transaction will bring International about $800,000 in cash or current assets, plus approximately 2,500 acres of phosphate mining property in Maury County, Tennessee. About 40,000 shares of International stock will be used in the exchange.

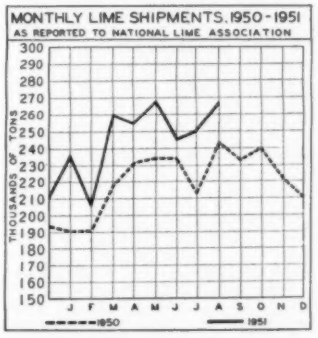
Molly K to Replace "Kin" For Koch Sand & Gravel Co.

The rule of succession obtains in river boat dynasties, as well as in ruling royal houses. The *Molly K.*, trim craft being readied by the Maxon Construction Company, Marine Division, of Tell City, Ind., will soon replace the *Billy Koch* for the Koch Sand and Gravel Company of Evansville.

Sponsor of the new towboat is the infant granddaughter of Henry F. Koch, head of the gravel concern. The *Molly K.* will be 78 ft. long, 24 ft. wide, with a 5½-ft. draft, and will be powered by two diesel engines with a combined 540 horsepower. Her hull has been completed, and work has started on the deckhouse. Until the *Molly K.* is completed about Christmas—the *Billy Koch*, built in 1924, will remain in service.



• Destined for use in the Transvaal area of South Africa, this Cummins diesel-powered mobile crushing plant was designed and manufactured by W. S. Thomas & Taylor, Ltd., Johannesburg, South Africa. The unit has a feed hopper with a grizzly, a 36- by 15-in. roller-bearing jaw crusher powered by a 150-hp. Model HP-601 Cummins diesel. A gyratory crusher, with a 10- by 4-ft. 2-deck vibrating screen and retractable and portable conveyors, is powered by a 200-hp. Model HPS-601 Cummins diesel. The engine in the Autocar tractor is a 165-hp. Model HRB-600 Cummins diesel.



According to data collected by the National Lime Association, 46 companies in August, 1951, shipped 267,023 tons of lime (173,201 quicklime, 93,822 hydrate). Reporting companies represent 59.3 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments were approximately 495,300 tons. Shipments by uses and grades for August, 1951, were

	Quicklime	Hydrate
Agricultural	5,674	11,933
Building	15,812	51,192
Chemical	151,715	30,697
Totals	173,201	93,822

Six Veteran Dust-Makers Bite the Dust at Northampton

At midnight on October 31 six 50-year old rotary kilns at the Lawrence Portland Cement Company's Northampton mill came to a final stop.

In December of 1949 Lawrence and the Borough Council of Northampton entered into an agreement calling for the discontinuance of these kilns on June 20. However, before the deadline arrived, company officials asked the council for permission to extend their operation through October, on the grounds that the demand for cement for military and naval installations called for unprecedented production.

There was considerable opposition to this request, principally from the citizens of Northampton, who objected to the dust from the kiln stacks. It was to seek an abatement of this dust nuisance which prompted the agreement between Lawrence and the borough council in 1949. Arguments that a situation which had been tolerated for 50 years could be endured a few months longer, and that the extension was sought in the interests of the defense effort finally prevailed, however, and operation of the six half-century-old kilns for four months longer was granted. Demolition of the old kilns has begun. In anticipation of the discontinuance of these kilns, Lawrence installed a third new large rotary kiln a little over a year ago. This new kiln, like its two remaining companions, is equipped with modern dust-collecting apparatus.

The thirteenth annual meeting of the National Council of Private Motor Truck Owners, Inc., is scheduled to be held on February 7 and 8, 1952, at the Hotel Statler in Washington, D.C. Representatives of all types of commercial enterprises will discuss mutual problems and participate in the making plans to solve them. The council maintains its headquarters in the Kass Building in Washington.

• This mobile diesel training unit, carried in a diesel truck, can be unloaded in 60 minutes.

Canada and Mexico Share Benefits of Diesel Training

On-the-job training in the operation and maintenance of diesel engines offered by the Detroit Diesel Engine Division of General Motors has now been made available to diesel owners and operators in practically all parts of North America.

The newest addition to the fleet of mobile training schools originally sponsored by the division has been dispatched to its first assignment near Alberta, Canada. Another unit recently installed in Mexico is ready to start training diesel men south of the border. These new additions bring the total number of mobile diesel training schools operated by General Motors to nine units.

Death Takes H. M. Capron, Former Equipment Firm Head

H. M. Capron

Horace Mann Capron, 79, former president and treasurer of the Equipment Corporation of America, 1150 S. Washtenaw Avenue, Chicago, died recently at his home at Laguna Beach, Calif. Before going to California to make his home in 1945, Mr. Capron was a resident of Winnetka, Ill.

In addition to his machinery construction business, Mr. Capron headed the Equipment Storage Corporation. During his 41 years in the equipment industry, he built his business from a small desk room in the old Chamber of Commerce Building on La Salle Street in Chicago into a national organization.

Salt Lake City Acts to Curb Sand and Gravel Spillage

Recently enacted by the Salt Lake City County Commission is an ordinance prohibiting the spilling of sand, gravel, and rocks on public highways. This action is a result of reports of broken windshields and of injuries to persons by flying rocks from overloaded trucks. Also cited was the damage to highways by accumulations of such material.

Violation of the provisions of the new ordinance would constitute a misdemeanor punishable by a fine of not more than $299 or imprisonment not to exceed six months.

N. Y. State Backs Bonds For N.Y.C.-Buffalo Thruway

New York voters approved a constitutional amendment at the November election to back the bonds of the State Thruway Authority, now constructing a 535-mile thruway from New York to Buffalo, with state credit.

The Thruway Authority, which hopes to have the project completed in 1954, estimates that the amendment will enable it to obtain lower interest rates with a savings in financing costs of about $120,000,000.

High Taxes Cut 3-M Profit Despite Record 1951 Sales

Earnings of the Minnesota Mining & Manufacturing Company are expected to approximate $2 a common share this year, as compared with $2.50 in 1950, based on the present 7,971,939 common shares outstanding after January's four-for-one split.

Higher tax rates and excess profits taxes now in effect, it was indicated, will shave this year's profit figure to about $16,000,000, against last year's record $20,318,904, although sales so far are running 13 percent ahead of a year ago. The 1950 sales total, also a record for the company, was $152,806,313, up 33 percent from 1949.

Officials of the Minnesota Mining & Manufacturing Company have announced the formal opening of a new branch office and warehouse at Buffalo, N.Y. The new unit replaces the structure opened in Buffalo in 1929 and serves upper and western New York and northwestern Pennsylvania.

Collapse of Hillside Buries Equipment in Utah Pit—Loss Set at $50,000

Damage estimated at about $50,000 to equipment of the Gibbons & Reed Company near North Salt Lake, Utah, was caused by a slide which buried most of the firm's machinery.

Accoring to Richard F. Reed, owner, the slide occurred on Sunday morning and was not witnessed by anyone. Workmen discovered that the entire hillside had buried the machine shop, a power shovel, trucks, and other equipment.

A fracture at a horizontal depth of about 200 ft. precipitated an avalanche of nearly 1,000,000 tons of earth and gravel. On the evening before the slide after truckers had completed their hauls from the pit, a dynamite blast was made to loosen material for the next day's work. Employees left the pit when earth dislodged by the charge apparently had stopped sliding.

Net Earnings Show Decline For Three Large Producers

Two major portland cement manufacturing concerns reported lower net incomes for the current year, although sales were higher. For the 12 months to September 30 the Alpha Portland Cement Company quoted a net income of $2,923,667 ($4.98 a share) on net sales of $24,528,600, as compared with $3,359,123 ($5.27 a share) on sales of $20,998,839 for the previous 12 months.

The nine-month 1950 figures for the General Portland Cement Company showed a net profit of $3,783,900 ($3.64 a share) on net sales of $20,417,300, as compared with $4,302,500 ($4.14 a share) on sales of $17,985,400 a year earlier. However, for the September quarter net profit stood at $1,328,400 ($1.27 a share) on net sales of $7,180,400, while last year's comparable figures were $1,321,500 ($1.27 a share) on sales of $6,155,100).

Giant Portland Cement officials reported a decline for the 12 months to September 30: net income, $586,545 (51 cents a share), as compared with $814,708 (92 cents a share) for the preceding year. Net sales were $5,011,827 in 1951, against $5,338,835 in 1950.

An issue of $5,000,000 Canada Cement Co. 4 percent serial debentures, 1951 series, dated November 1 and maturing as to $500,000 principal amount yearly has been sold. Planned annual plant capacity increase in 1952 to 17,200,000 barrels compares with 14,000,000 barrels now and 10,000,000 barrels in 1945.

According to the *International Dragline*, official organ of the Florida Phosphate Division, International Minerals and Chemical Corporation, employees of the division recently achieved the distinction of working 1,000,000 man-hours without a lost-time accident.

Sand and Gravel Industry Loses 4 Valued Members Within Two Months

Four well-known men in the sand-and-gravel industry—all members of the National Sand and Gravel Association—died recently, one at the association's directors' meeting at White Sulphur Springs on September 30.

Hamilton P. Caldwell, chairman of the board of the Ohio River Sand Company, Louisville, Ky., suffered a fatal heart seizure after arriving at White Sulphur Springs. Mr. Caldwell served as a director of N.S.G.A., and also on the executive committee. A former secretary of his firm, he had retired two years ago from active duty because of ill health.

On the next day, October 1, those attending the meeting at White Sulphur Springs heard the sad news of the passing of a second member, Eric W. Ryberg, who had died at Salt Lake City the night before. A silent tribute was paid to these two men at the opening session of the meeting, and expressions of appreciation were also delivered.

Mr. Ryberg's death followed a long illness. He retired in 1947 as president of the Utah Sand and Gravel Products Corporation, but remained as vice-president of the firm and a member of its board of directors. He was a past president of the Intermountain Branch, Associated General Contractors of America, and also served as a director of several Western concerns, including the Utah Lime and Stone Company.

Also during the last days of September death claimed Hugh Haddow Jr., who was president of the N.S.G.A. in 1926 and 1927. Mr. Haddow died at Rockaway, N. J., where he had lived in retirement after having served for many years as president of the Menantico Sand and Gravel Company, Millville, N. J. Trained as a mining engineer, Mr. Haddow was a member of the Society of Mining and Metallurgical Engineers, and had served as a consultant to the United States Bureau of Mines.

On October 6, V. O. Johnston, president of N.S.G.A. in 1920 and 1921, died at Summit, N. J., after an illness of two months. He was educated in law and was a practicing attorney in Cleveland prior to entering the sand-and-gravel business in 1907. Mr. Johnston was president of the Lincoln Sand and Gravel Company, Lincoln, Ill., until March, 1951, when he was made chairman of the board. As the third president of N.S.G.A., he traveled throughout the United States promoting the organization and urging those in the industry to realize the benefits of a national association.

Gates Rubber Co. Completes Forty Years in Business

Progress News, official house organ of the Gates Rubber Company, Denver, Colo., made its October, 1951, number the 40th anniversary issue, to mark an important milestone in the history of the firm. An illustrated chronicle of the company's career from its founding in 1911 to the present, photographs of the "then and now" variety, prominent personalities associated with the firm, recollections of events long past, and present activities, all profusely illustrated, tell the story of Gates through 40 years.

Founded in 1911 by Charles C. Gates, who is still president of the firm, the business grew from a small shop to an industry housed in 30 inter-connected buildings covering 53 acres. From a two-man affair—John Gates, brother of Charles, was associated with the firm from the beginning—this venture expanded until in July of 1951 an all-time high of 7,337 persons on the payroll was recorded. John Gates is secretary treasurer of the firm, and Charles C. Gates, Jr. and Harry Gates (sons of President Gates) are vice-president in charge of the business research department and vice-president in charge of research, engineering, and development, respectively.

January 27 to 31 are the dates of the 33rd annual meeting of the Associated Equipment Distributors, which will be held at Chicago's Conrad Hilton Hotel (formerly the Stevens Hotel). Members are urged by the arrangements committee to register promptly, in order to obtain desirable hotel accommodation.

Lawrence Portland Cement Company officials report for the 12-month period ended September 30 a net profit of $913,358, equal to $4.06 per share on net sales of $9,699,930, as compared with $861,412 or $3.83 per share on sales of $8,087,904 in the previous year.

• Once more Americans will have a chance to do something to help fight the killer tuberculosis, which each year slays more of their countrymen than all other infectious diseases combined. Approximately 40,000 persons in the United States in 1949—100 a day or one every 13 minutes—died from this disease, which annually takes 5,000,000 lives all over the world. We believe that during this holiday season readers of Pit and Quarry will wish to aid the National Tuberculosis Association in the campaign to stamp out T.B. by buying and using 1951 Christmas seals.

Division of $500,000,000 In Federal Aid for Roads Announced by Sawyer

Apportionment of the $500,000,000 authorized as federal aid to the states for highways in the fiscal year beginning July 1, 1952, has been announced by Secretary of Commerce Charles Sawyer. The funds were authorized by the Federal-aid Highway Act approved on September 7, 1950.

The Act provides $225,000,000 for projects on the Federal-aid Highway system, $150,000,000 for projects on the Federal-aid secondary system, and $125,000,000 for projects on the Federal-aid highway system in urban areas.

Funds will be expended under the supervision of the Bureau of Public Roads and according to the general procedure in use for many years, in which state highway departments propose projects, prepare plans, award contracts, and supervise construction, all subject to federal approval. Federal participation is limited to half the cost except in the public-lands states, where participation may be increased above 50 percent by one-half of the percentage of the area of the state which is public land.

Funds for the Federal-aid highway system are apportioned in proportion to area, population, and mileage of post roads, each being given equal weight. Funds for Federal-aid secondary roads are apportioned in the same manner, except that rural population is used, rather than total population. Funds for urban projects are apportioned in proportion to population in municipalities and other urban places of 5,000 or more.

Job Hazards for the Young Discussed in New Bulletin

Mining Other Than Coal, a bulletin recently issued by the United States Department of Labor's Bureau of Labor Standards, is concerned with the hazards of various types of mining operations in relation to the employment of young workers. The bulletin covers metal mines, nonmetal mines, ore dressing plants, quarries, clay pits and clay mines, and sand-and-gravel operations. It served as the basis for Hazardous-Occupations Order No. 9. Issued by the Secretary of Labor under the Fair Labor Standards Act, such orders prohibit the employment of minors under 18 in occupations considered particularly hazardous for young workers or detrimental to their health or well-being.

Single copies of the bulletin may be obtained without charge from the Bureau of Labor Standards, U. S. Department of Labor, Washington 25, D. C. Quantities may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 25 cents per copy.

Officials of the Feldspar Flotation Company at Spruce Pine, N. C., stated that work would be started immediately to rebuild structures destroyed or damaged in a fire which swept the main plant. Damage was estimated at $150,000.

Convention Program

Hotel Statler, Washington, D. C.

National Agricultural Limestone Institute

January 15-17, 1952

TUESDAY, JANUARY 15

10 A.M.

PAN-AMERICAN ROOM

Board of Directors Meeting

WEDNESDAY, JANUARY 16

MORNING SESSION — 9:30 A.M.

FEDERAL ROOM

Presiding—President-Elect
Registration—Foyer of Federal Room
Call to Order and Welcome, President
Presentation by Secretary of the Register of Members Present
Reading of Minutes of Previous Meeting
Treasurer's Report
Reports of Committee Chairmen
- Finance
- Membership
- Legislative
- Percentage Depletion

Executive Secretary's Report—R. M. Koch
Announcement of New Committees
Old Business
New Business

GREETING LUNCHEON — 12:30 P.M.

SOUTH AMERICAN ROOM

Presiding—Director John H. Riddle, Riddle Quarries, Inc., Marion, Kan.
"That's the Spirit"—Address by Dr. Tennyson Guyer

AFTERNOON SESSION — 2 P.M.

FEDERAL ROOM

Presiding—Director Verne C. Morgan, Kentucky Stone Co., Louisville, Ky.
"Lime in a Grassland Farming Program"—Address by Dr. Samuel R. Aldrich, Extension Agronomist, Cornell University
"Price Stabilization and the Agricultural Limestone Industry"—Address by Henry A. Huschke, Head, Agricultural Chemicals Section, Office of Price Stabilization

EVENING SESSION — 6 P.M.

CONGRESSIONAL ROOM

Cocktails
Buffet Supper
Dancing

THURSDAY, JANUARY 17

MORNING SESSION — 10 A.M.

FEDERAL ROOM

Presiding—Director K. K. Kinsey, Concrete Materials & Construction Company, Cedar Rapids, Ia.
Panel on Promotion
Participants:
- Harry E. Battin, Callanan Road Improvement Co., South Bethlehem, N. Y.—Company-Employed Agronomists
- Floyd H. Millen, Valley Limestone & Gravel, Inc., Boneparte, Ia.—Billboard Advertising and Newspaper Advertising
- Robert J. Pleasant, Anchor Stone & Materials Company, Tulsa, Okla.—Use of Radio
- William E. Stone, Piqua Stone Products Div., Armco Steel Corp., Piqua, O.—Direct Advertising Media—Blotters, Leaflets, etc.

LUNCHEON — 12:30 P.M.

SOUTH AMERICAN ROOM

Presiding—Directory Barney T. Scharbach, Sand & Stone, Inc., Essexville, Mich.
Address by Charles F. Brannan, Secretary of Agriculture

AFTERNOON SESSION — 2:30 P.M.

FEDERAL ROOM

Presiding—Director Robert Patton, Plum Run Stone Division, New York Coal Sales Company, Columbus, O.
Panel on Operations (Participants to be announced)

RECEPTION FOR MEMBERS AND GUESTS 6 P.M.

CONGRESSIONAL ROOM

ANNUAL BANQUET — 7 P.M.

PRESIDENTIAL ROOM

Presiding—President-Elect
"Bread, Butter and Baloney"—Address by David P. Livingston, Washington, Ia.

Western Potash Conducts Tests at Canadian Deposit

According to the New York *Journal of Commerce*, one of the three largest known fields of potash in the world is presently being developed at Unity, Sask., Canada, by Western Potash Corporation, Ltd., which is conducting tests in this area. These beds were described in 1949 by the American Institute of Mining and Metallurgical Engineers to be the most promising on the continent.

The Unity bed has been ascertained to be 11 ft. thick and to extend for at least 12 miles. This would rank it as one of the three known largest in the world, along with deposits at Strasfurt, Germany, and Carlsbad, N. M. At Strasfurt and Carlsbad recovery is by manual mining, but at Unity, because of the horizontal structure of the bed, the brine recovery method is considered possible.

Fred Burggraf to Head Highway Research Board

Fred Burggraf, formerly associate director of the Highway Research Board, has been named director, succeeding the late Roy W. Crum. Mr. Burggraf, who has been acting director since Mr. Crum's death last spring, has been associated with the board for 15 years.

Prior to joining the Board Mr. Burggraf was affiliated with the Structural Materials Division of the Bureau of Standards. He conducted research investigations on the expansive behavior of unsound cements subjected to various treatments. Subsequently he was with the Illinois Division of Highways as research engineer, and in 1928 he joined the Highway Research Board, serving for four years as research engineer.

After eight years with the Calcium Chloride Association Mr. Burggraf returned to the Board as assistant director. He was named associated director in 1945. He is a member of the American Society of Civil Engineers, the American Concrete Institute, and the American Society of Testing Materials. He has also authored numerous papers on highway research problems.

Consolidated Cement Corp. Opens Quarry at Paulding, O.

Production of crushed limestone at the new Consolidated Cement Corporation quarry near Paulding, O., began recently after a year of preliminary work.

First project was the removal of overburden, which was accomplished with a big dragline, also used for handling the material blasted from the pit. With its 200-ft. boom and its 10-cu. yd. bucket, the "walking" dragline, first of its type in this area, made rapid strides. First digging operations were started in January of 1951, and approximately 550,000 cu. yd. of material were removed for the initial pit, 250 ft. wide and 1,700 ft. long.

For the last several months workmen have been installing a portable primary crusher, a 1,400-ft. conveyor belt system, and loading hoppers.

Under the 12-ft. layer of cap rock, which is not suitable for the manufacture of cement, is a stratum about 45 or 50 ft. in depth. This material will be loaded and shipped to the firm's plant at Cement City, Mich.

Dillon, Sharpe Reorganized As Dillon Stone Company

The Dillon Stone Company, Columbus Junction, Ia., has been established as successor to Dillon, Sharpe and Company of the same city, according to an announcement released on October 1.

The new firm, of which William D. Dillon is president, is under the same executive management and all future business will be conducted under the new name.

The Ozark-Mahoning Company of Tulsa, Okla., recently signed a contract with the Defense Material Procurement Agency to produce an additional 100,000 tons of fluorspar during the next five years. The agreement calls for the company to spend $1,400,000 for mine development and a new mill, while the government underwrites the price of the new production for the five-year period.

1949 Minerals Yearbook, Revised and Improved, Issued by Mines Bureau

A new volume of the *Minerals Yearbook*, a basic source of information on domestic and foreign mineral commodities, published annually by the Bureau of Mines, is now available for distribution, Secretary of the Interior Oscar L. Chapman has announced.

This issue, containing complete data for the year 1949, as well as comparative data for earlier years, has been improved by new summary tables on domestic mineral production, resulting in uniformity of national and state output data. The new national totals pertain exclusively to the production from domestic mines, while in previous issues of the yearbook they included in some instances mineral products made in this country from imported raw materials. Also, the value of United States mine output, as now constituted, is limited to the 48 states and the District of Columbia. Previously Alaska and Hawaii, together with Puerto Rico and other possessions, were included. The territories and island possessions now appear in separate tables.

The 1949 issue contains 1,635 pages of text plus a 26-page index. The commodity reviews, written by specialists in their respective fields, deal with metals, nonmetallic minerals, and mineral fuels.

Bound copies of the 1949 *Minerals Yearbook* may be obtained only from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. for $4.50 each. All of the chapters of the book have been printed as individual preprints, which are also available from the Superintendent of Documents at from 5 to 30 cents each.

40 Percent Gain in Output Predicted at Diatomite Plant

Completion of expansion at the Johns-Manville plant and mine facilities at Lompoc, Calif., scheduled for the end of this year, is expected to ease the critical shortages in many types of diatomite filter aids and fillers, according to Arthur Elsenbast, vice-president and general manager of the Celite Division. Mr. Elsenbast stated that the expansion will increase production by 40 percent. The diatomite deposit at Lompoc is said to be the largest in the world.

According to information recently released by the Defense Minerals Administration, certificates of necessity on "lime and dolomite" have been approved, aggregating an increase in annual capacity of 3,697,920 tons.

Perlite Institute Holds Second Annual Meeting, Enlarges Its Personnel

The youthful Perlite Institute came of age at its second annual convention in New York City at The Park Sheraton Hotel on October 11 and 12, 1951. Not only were the members celebrating the Grand Award for distinguished service by trade associations to their industry, but they also celebrated the acquisition of five new members, making a total of 45.

The Perliters now feel justified in adding to their staff a Washington field engineer, a publicity and advertising manager, and a technical secretary, together with the necessary stenographic service.

Several fire and sound-transmission tests are on their program for 1952, as well as research at five independent laboratories. Experience on substantial-sized operations, such as the insulating roof of the largest cold storage warehouse ever built in the world, has confirmed the strength, yields, and mix proportions issued several months ago.

The Board of Directors consists of the following men: J. John Brouk (president), Kirk E. Hazleton (vice-president), Donald H. Gott, Lewis Lloyd, and J. C. Kingsbury. Wharton Clay was re-elected secrtary-treasurer.

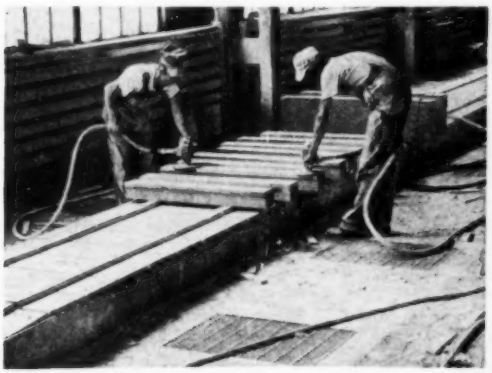
According to the New York *Journal of Commerce*, the Tunisian phosphate industry is expanding. Increased production was manifested by peak exports of phosphate rock, which reached a record figure of 593,784 tons in the second quarter of 1951, making a total of 1,016,916 tons for the first six months of the year, as compared with 692,349 tons in the corresponding period of 1950.

Exhaust System a Solution For Major Dust Problem

The dust problem created by rubbing and abrasive operations on the finishing conveyor at the Ingalls Stone Company, Bedford, Ind., has been overcome with a specially-designed dust control system. The dust-laden air is exhausted through downdraft grills in the floor alongside the conveyor and cleaned by an American Air Filter Company Type D Roto-Clone dust collector. The conveyor is 50 ft. long by 42 in. wide.

Eight 48- by 36-in. grills—four on each side of the conveyor—are connected by ducts to the dust-collecting equipment located outdoors. The exhaust volume is concentrated in the zone of dust-producing operations by covering four of the grills farthest from the operators with plywood boards.

The four uncovered grills each handle 4,000 cu. ft. of air per minute—enough to exhaust the dust that is generated before it reaches the operator or disperses through the plant.



• Dust in the Ingalls Stone Company's plant at Bedford, Ind., is collected by a dust-control system before it disperses to other parts of the building. The dust-laden air is exhausted through grills in the floor.

• Right: The dust-collecting equipment is outside the plant. The pre-cleaner removes coarse dust particles from the air stream before it reaches the exhauster-collector, which removes the finer particles.

Awards Made to 58 Plants In Mines Bureau Contest

Awards for outstanding safety records were made to 58 plants in the 1st annual Bureau of Mines Safety Competition for Sand and Gravel Plants. A total of 192 sand-and-gravel operations were entered in the contest for 1950. These plants were classified into two competing groups according to type of operation—a bank or pit group and dredge group. Fifty-five of the enrolled plants were dredge operations and 137 were bank or pit operations.

Over-all injury experience for the competition was a frequency rate of 24.478 injuries per 1,000,000 man-hours and a severity rate of 2.017 days lost per 1,000 man-hours of work. The frequency rate at dredge operations was more favorable than at bank or pit operations, but the severity rates for the two types of plants were virtually the same.

Enrolled plants which had no disabling injuries and were worked 20,000 or more man-hours in 1950, were awarded Certificates of Achievement in Safety by the U.S. Bureau of Mines. In addition, all employees of the top ranking plants in each group were awarded individual Certificates of Accomplishment in Safety.

Dredge Group—The Memphis plant, a dredge operation of the Marquette Cement Manufacturing Company at Memphis, Tenn., had the best safety record in this group. It was operated a total of 131,699 man-hours without any disabling injuries through 1950. The contest in this group was close, and the second ranking dredge operation, the Eagle Lake plant of the Texas Construction Material Company at Eagle Lake, Tex., also had a perfect safety achievement of no disabling injuries in 129,880 man-hours during 1950. All told, in the 1950 contest there were 26 dredge operations which attained injury-free safety records.

Bank or Pit Group—Top safety honors in this group were awarded to the Quigley plant of the Fort Worth Sand and Gravel Company, Inc., at Fort Worth, Tex. This wet-pit operation achieved the perfect safety record of no disabling injuries in 105,819 man-hours of worktime through 1950. Including this ranking plant, there were 76 bank or pit operations which were worked throughout the year without any lost-time injuries.

Injury-free Operations — Employees and officials at 102 of the 192 competing sand-and-gravel operations in the 1950 contest achieved the outstanding safety records of operating throughout the year without any lost-time injuries. Men at these 102 plants, of which two were trophy winners, worked 3,235,955 man-hours or 32 percent of the 10,172,-520 man-hours worked in all enrolled plants. The attainment of injury-free records at any plant shows clearly what can be achieved through the close cooperation of employees and officials in efficient safety programs.

The following plants (excluding the trophy winners) arranged in order of hours of exposure were worked through 1950 without any disabling injuries. All injury-free plants with 20,000 or more man-hours of exposure during the year were awarded Certificates of Achievement in Safety by the Bureau of Mines. Forty-four injury-free plants did not receive Certificates because they did not meet the minimum requirements of being worked at least 20,000 man-hours through the year.

Eagle Lake dredge plant, Texas Construction Material Co., Eagle Lake, Tex., 129,880 man-hours.

Memphis dredge plant, Missouri Portland Cement Co., Memphis, Tenn., 100,-227 man-hours.

Irwindale No. 6 pit plant, Consolidated Rock Products Co., Irwindale, Calif., 99,616 man-hours.

Hudson pit plant, Gifford-Hill & Co., Inc., Hearne, Robertson County, Tex., 77,947 man-hours.

Centerville No. 106 pit plant, Pacific Coast Aggregates, Inc., Centerville, Calif., 70,760 man-hours.

Bethel pit plant, Bernard J. Dolan Co., Bethel, Conn., 67,103 man-hours.

Pekin dredge plant, McGrath Sand & Gravel Co., Pekin, Ill., 64,539 man-hours.

Sunland dry-bank plant, City Rock Co., Sunland, Calif., 63,255 man-hours.

Alexandria dry-bank plant, Northern Virginia Construction Co., Inc., Alexandria, Va., 62,340 man-hours.

Snelling Avenue pit plant, J. L. Shiely Co., St. Paul, Minn., 60,639 man-hours.

Laban Spur pit plant, Texas Construction Material Co., Alleyton, Tex., 55,-770 man-hours.

Plainfield dry-bank plant, The Chicago Gravel Co., Plainfield, Ill., 53,-937 man-hours.

Warwick dry-bank plant, Rhode Island Sand & Gravel Co., Inc., Warwick, R. I., 53,372 man-hours.

Largo No. 10 pit plant, Consolidated Rock Products Co., Azusa, Calif., 51,485 man-hours.

Kingsbury pit plant, Fort Worth Sand & Gravel Co., Inc., Euless, Tex, 49,-085 man-hours.

Tom pit plant, Southwest Construction Materials Co., Kleberg, Tex., 48,094 man-hours.

Orange No. 14 pit plant, Consolidated Rock Product Co., Orange, Calif., 46,278 man-hours.

Thomas pit plant, Fort Worth Sand & Gravel Co., Inc., Birdville, Tex., 45,537 man-hours.

Lincoln dredge plant, The Lincoln Sand & Gravel Co., Lincoln Ill., 44,396 man-hours.

Hartland pit plant, Hartland Sand & Gravel Corp., Hartland, Wis., 42,684 man-hours.

No. 2 dredge plant, Lyman-Richey Sand & Gravel Corp., La Platte, Neb., 40,782 man-hours.

No. 9 and 10 dredge plants, Lyman-Rickey Sand & Gravel Corp., Valley, Neb., 40,587 man-hours.

"Y" dry-bank plant, The Buffalo Slag Co., Inc., Franklinville, N. Y., 40,387 man-hours.

Fort Jefferson dry-bank plant, American Aggregates Corp., Fort Jefferson, Ohio, operated 40,349 man-hours.

Dresden pit plant, The Zanesville Gravel Co., Dresden, Ohio, 40,222 man-hours.

Holley dry-bank plant, Gifford-Hill & Co., Inc., Van Horn, Tex., 38,488 man-hours.

Kaw No. 2 dredge plant, Stewart Sand & Material Co., Hurner, Kans., 38,151 man-hours.

No. 78 dredge plant, Lyman-Richey Sand & Gravel Corp., Plattsmouth, Neb., 37,890 man-hours.

Muscatine dredge plant, Automatic Gravel Products Co., Muscatine, Iowa, 37,484 man-hours.

Sierra No. 19 pit plant, Consolidated Rock Products Co., Monrovia, Calif., 36,168 man-hours.

Boonville dredge plant, Missouri River Sand & Gravel Co., Boonville, Mo., 36,000 man-hours.

Portland dry bank plant, Portland Sand & Gravel Co., Portland, Pa., 35,-511 man-hours.

Kalamazoo dry-bank plant, American Aggregates Corp., Kalamazoo, Mich., 35,217 man-hours.

No. 5 & No. 6 dredge plants, Lyman-Richey Sand & Gravel Corp., Plattsmouth, Neb., 35,147 man-hours.

Lindsay No. 123 pit plant, Pacific Coast Aggregates, Inc., Lindsay, Calif., 34,964 man-hours.

Yardley pit plant, Union Sand & Gravel Co., Spokane, Wash., 31,201 man-hours.

Farmingdale dry-bank plant, J. W. Robinson & Sons, Farmingdale, N. Y., 31,074 man-hours.

Utica pit plant, E. C. Bellrose Sand Co., Utica, Ill., 30,860 man-hours.

Akron dry-bank plant, Rubber City Sand and Gravel Co., Akron, Ohio, 30,473 man-hours.

Bloomington dredge plant, McGrath Sand & Gravel Co., Bloomington, Ill., 30,320 man-hours.

"C" dry-bank plant, Hornell Gravel Corp., Cohocton, N. Y., 28,254 man-hours.

Shelton dry-bank plant, The Grasso Construction Co., Shelton, Conn., 27,960 man-hours.

Interlachen dredge plant, All Florida Sand, Uninc., Interlachen, Fla., 27,682 man-hours.

Boonville No. 1 dry-bank plant, Eastern Rock Products, Inc., Boonville, N. Y., 27,562 man-hours.

Carpentersville dry-bank plant, Portland Sand & Gravel Co., Carpentersville, N. J., 26,858 man-hours.

Northville dry-bank plant, Northville Sand & Gravel Co., Northville, Mich., 26,763 man-hours.

Wauwatosa dry-bank plant, A. J. Reiske Sons Co., Wauwatosa, Wis., 26,090 man-hours.

Winona dredge plant, The Winona Sand & Gravel Co., Winona, Minn., 25,581 man-hours.

Ludlow Falls pit plant, Steiners Sand & Gravel Co., Ludlow Falls, Ohio, 25,520 man-hours.

Chillicothe dry-bank plant, Chillicothe Gravel Co., Chillicothe, Ill., 25,279 man-hours.

Sussex & Merton dry-bank plant, Edward Lutz Sand & Gravel Co., Inc., Sussex & Merton, Wis., 24,841 man-hours.

Fort Wright dry-bank plant, Union Sand & Gravel Co., Spokane, Wash., 23,306 man-hours.

Slinger dry-bank plant, Palmer Crushing Corp., Slinger, Wis., 20,781 man-hours.

East Peoria pit plant, Peoria Concrete Construction Co., East Peoria, Ill., 20,600 man-hours.

York Haven pit plant, Pennsylvania Supply Co., York Haven, Pa., 20,561 man-hours.

Portland dredge plant, Portland Gravel Co., Portland, Ore., 20,053 man-hours.

The safety record of the 192 enrolled plants was a total of 249 disabling injuries in an aggregate worktime of 10,172,520 man-hours. The resulting frequency rate was 24.478 injuries per 1,000,000 man-hours and the severity rate was 2.017 days of disability per 1,000 man-hours of work.

Of the 249 disabling injuries at the competing sand-and-gravel plants, one was a fatality, 9 were permanent partial disabilities and 239 were temporary total disabilities. The average severity of all injuries was 82 days and of the temporary total disabilities was 21 days per injury. The total time lost or charged from all injuries at the competing plants was 20,517 days.

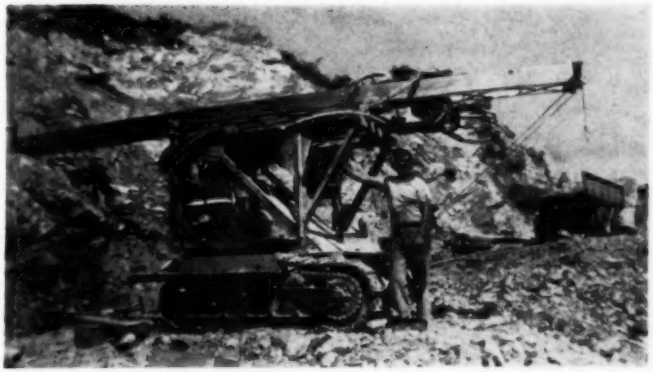
Injury rates at the enrolled dredge plants in 1950 were 22.019 injuries per 1,000,000 man-hours and 2.007 days of disability per 1,000 man-hours. Both of these rates were lower than the comparable rates at bank or pit operations where the respective rates were 25.981 injuries per 1,000,000 man-hours and 2.023 days lost per 1,000 man-hours. However, the average severity of 91 days per injuries for all disabilities at dredge plants was well above the corresponding average of 78 days per injury at banks or pits.

A total of 85 disabilities occurred during the 3,860,321 man-hours worked at the dredges. Of these 4 were permanent partial and 81 were temporary total injuries. In the 6,312,199 hours of worktime at bank or pit operations, there were 1 fatal, 5 permanent partial, and 158 temporary total injuries.

Sand and gravel plants in 33 states were enrolled in this first annual contest of the Bureau of Mines. The leading states in number of participating plants were California with 25, Texas with 21, Ohio with 18, Illinois with 15, Pennsylvania with 14, and New York with 11.

The leading causes of injuries at the competing sand-and-gravel plants in 1950 were haulage accidents, falls of persons, handling-object accidents, and machinery accidents. These causes each resulted in from 35 to 38 injuries for an

(*Continued on page 66*)



• The drill at the Rowe quarry, ready to be moved.

Production at Rowe Speeded By New Drilling Technique

Drilling at the Malden, Mass., quarry of the Rowe Contracting Company, producers of crushed trap rock, has been speeded up by the company's development of a novel drilling machine. The drill rig consists of a Barber-Greene self-propelled loader which has been fitted with a 22-ft. drill tower. An air tugger lowers the tower to a horizontal position for transporting. A standard 4-in. drifter mounted on the tower has a 1½-in. chuck and uses 1½-in. hollow drill steels in 15- and 30-ft. lengths. Each steel ends in a Rock Bit R-3 thread and is fitted with 4-in., 4-point tungsten carbide Rok-Bits made by the Rock Bit Sales and Service Company, Philadelphia, Pa. The drifter is chain-fed into the hole.

The material at the quarry is a rhyolite trap rock which is exceptionally abrasive. Regrinding the tungsten carbide bits is necessary after 15 ft. of drilling. With regrindings, the bits average 434 ft. of rock before wearing out in the Malden quarry, and 800 ft. in the nearby Winchester quarry. Speeds of 12.8 f.p.h. have been obtained in the harder rock.

Holes are drilled on a 12-ft. burden and 12-ft. centers to a depth of 30 ft. In drilling the 4-in. holes, air is constantly being blown through the hollow steels and through a ½-in. blowpipe suspended from the drifter and reaching to within 15 in. of the bit. The additional air aids in cleaning the hole and cooling the bit.

Water introduced in drilling toe holes is obtained from the top of the quarry by gravity flow and is the waste from the air compressor cooling system. The toe holes are blown free of muck by inserting a 1½-in. blowpipe at intervals. Using water speeds up the drilling and adds to the bit life, company personnel find.

Blasting is done with Hercules 60 percent, using about 120 lb. of 3-in. cartridges for each 30-ft. hole. They are fired with millisecond delay caps, using 25 millisecond spacing. The fragmentation is excellent and blasting complaints have practically disappeared.

Commenting on the drilling equipment, Ranson Rowe, president of the firm, made the following comment: "Drilling and blasting, like many other businesses, has become a specialty, the cost of which often means the difference between profitable and unprofitable operation. Because of the uncertainty of cost, many quarries are leaning toward contract drilling, so that they will be able to figure a known cost per ton of rock at the shovel. Well drilling for blast holes, with its initial heavy investment and attendant tool dressing cost, will be replaced with self-propelled, easily-placed rigs such as we have developed. The 4-in. holes on smaller centers give better fragmentation, thus reducing the cost per ton of rock blasted."

Drilling in the quarry requires a two-man crew with the new rig. Before, plant superintendent Egidio Binda recalls, 15 drillers using tripods had trouble keeping the crushing plant supplied. The new drill rig was engineered by Jack Lynch, superintendent, who says that they are making additional units with the idea of undertaking contract drilling.

• The drill in operation in the quarry.

30 years ago in Pit and Quarry

By Walter E. Trauffer

THE activities and problem of the cement industry were prominently featured in the December, 1921, issue of PIT AND QUARRY. From the standpoint of news value the feature article was probably the on entitled *French Quick Hardening Cement*. This told of the development by the French during World War I of a quick-hardening cement for special military purposes. This cement was known as Lafarge quick-hardening aluminous cement or "ciment fondu" (fused cement). Its peacetime value was described as rather limited. It had a normal setting time but hardened as much in 24 hrs. as most portland cements did in 28 days. This cement also had high resistance to the decomposing effects of sea water and other similar solutions.

Apparently the first to publicize this new product in this country was Edwin C. Eckel, consulting engineer of Washington, D. C. He said that this cement was a lime aluminate, differing from normal portland cement in the almost total absence of silica; that it was prepared by actual fusion, not by mere clinkering; that it was almost white in color; and that it hardened with great rapidity. This cement was made in a small blast furnace charged with coke, limestone, and bauxite, and was then cooled and ground. Its composition was about 50 percent lime, 40 percent alumina, and 10 percent silica, etc. Mr. Eckel suggested that the resistance of this low-silica, low-lime, high-alumina cement to alkaline action pointed out the need for further study, as such deterioration in American cements had been blamed on their alumina content.

In an article, *Cement Industry in the British Isles*, written especially for PIT AND QUARRY, Alfred B. Searles, technical advisor to the cement and allied industries, gave a thorough analysis of the British cement industry. He pointed out many flaws in the existing production and marketing methods and facilities and the need for more courageous and long-range planning.

Included in this issue was a directory of cement producers throughout the world, an ambitious effort but obviously incomplete as far as foreign countries were concerned. A total of 133 companies were listed on this continent and only 41 elsewhere. Incomplete as this list obviously was, it was probably the best effort of its kind to date. Even today no complete list is readily available.

A three-page illustrated article described the progress made on the construction of the new plant of the Western States Portland Cement Company near Davenport, Ia. This plant was to have five 10- by 220-ft. kilns, each with a capacity of 1,000 bbl. daily, but actually it was never completed. This article brought back memories to this writer, who had his first contact with the cement industry at this plant as a rod-and chainman on the engineering crew during the preceding summer while home on vacation from college.

Another four-page illustrated article described the progress on the construction of the Pyramid Portland Cement Company's plant at Des Moines, Ia., which was near completion. This operation later became a part of the Penn-Dixie chain of plants.

Cement was also prominent in the news, including a report of October, 1921, production and shipments. There were increases in both categories, counter to the seasonal trend, and the production of 10,506,000 bbl. was the largest ever recorded in a single month. Considerable activity by individual companies was also reported, with new plants being planned in New York, New Jersey, Michigan, and Texas.

A feature article entitled *Completely Disillusioned* must have created considerable controversy in those days. It dealt with the experience of contractors with temporary private pits and quoted numerous examples and authorities to show that in most cases such efforts proved to be "expensive experiments". The article concluded that "all things considered, the contractor is best served in the important business of supplying concrete aggregates by the man who *must* operate his business efficiently and continuously, the commercial producers".

Other important articles included a detailed report on the proposed safety code for quarries in Wisconsin, a staff-written article on electricity in pits and quarries, complete illustrated descriptions of the improved operations of the Southern Illinois Sand and Gravel Company at Metropolis, Ill., and the new sand and gravel plant of W. H. Spicer at Marseilles, Ill.

As always, there was considerable news of machinery manufacturers. One item told of the resignation of W. H. K. Bennett as manager of the pump department of the American Manganese Steel Company to open his own offices as sales agent for Amsco and to design and build sand and gravel dredges and screening plants. Another item announced the appointment of the late Bradley S. Carr as manager of the Amsco pump department.

Sand-and-Gravel Contest

(*From page 65*)

aggregate of 147 disabling injuries or 60 percent of the total for which causes were stated at all enrolled plants. Falling objects and flying objects each caused 20 disabilities.

At banks or pits the most frequent causes of injuries were handling objects, haulage, machinery, and falls of persons. Together these injuries caused 98 disabilities or 61 percent of all injuries with stated causes at banks or pits. At dredges, falls of persons resulted in 18 disabilities. This cause was followed in order by machinery, haulage and handling-objects accidents as the principal causes of injuries.

With regard to severity, machinery accidents at all plants in the contest caused injuries with the greatest disability. The average severity for injuries caused by machinery was 260 days per disability. Injuries from haulage accidents had the next highest average severity—218 days per disability. The next most severe injuries resulted from hand tool accidents which had an average severity of 28 days per disability.

Machinery accidents at all plants caused injuries which had a total time loss or charge of 9,107 days or 44 percent of the total time charges. Injuries from haulage accidents resulted in an aggregate time loss of 8,267 days or 40 percent of the total time charge. The one fatality at the enrolled plants was from a haulage accident at a bank.

This report presents the results of the first annual Safety Competition for sand-and-gravel plants sponsored and conducted by the U. S. Bureau of Mines. Any bank, pit, or dredge operation that works an unconsolidated sand or gravel deposit is eligible to enter the contest. It covers work time and injuries of all employees at the plant up to the point at which the sand or gravel loses its identity (as in ready-mix plants) or the point at which the producer relinquishes control of the material.

The competing plants are classified into two groups: (1) pit or bank operations, and (2) dredge operations. In each group, the plants are ranked according to the injury-severity rate or, in cases of injury-free operations, according to the man-hours worked. The top ranking plant in each group is awarded a Certificate of Achievement in Safety, and each man working in the winning plant receives a Certificate of Accomplishment in Safety. The Bureau of Mines also awards Certificates of Achievement in Safety to each injury-free plant in the competition, provided that the plant was operated for 20,000 or more man-hours through the year.

The National Sand and Gravel Association, in addition to the bureau's industry-wide contest, sponsors a safety competition *for plants of its members*. This association competition is conducted by the Bureau of Mines and the results are compiled from records submitted by the competing plants in the industry-wide contest. Member plants in the association competition are divided into three competing groups: (1) Those working 100,001 or more man-hours; (2) those working 50,001—100,000 man-hours; and (3) those working 50,000 or less man-hours.

Information on the contests is available from the Accident Analysis Branch, Bureau of Mines, Washington, D. C.

MEN OF THE INDUSTRY---

Baker of National Gypsum

MELVIN H. Baker, president and founder of the National Gypsum Company, Buffalo N.Y., and one of the nation's outstanding business men, was born on August 11, 1885, in Sevierville, Tenn. He was a student at Carson-Newman College prior to the launching of his business career, which started with the Miller Manufacturing Company in 1908. While serving as a distributor for a Wisconsin window screen manufacturer, he became acquainted with J. F. Haggerty, vice-president of the Beaver Products Company. He joined the organization in 1912 as a Southeastern States sales representative, and became sales manager in 1914.

The closing out of Beaver Products in 1922, due to the slump period which followed World War I, left Mr. Baker, Mr. Haggerty, and C. E. Williams, geological expert of the company, jobless. Although unknown to these three men at the time, their affiliation with one another while working for Beaver Products laid the groundwork for the present National Gypsum Company.

In 1922, Mr. Baker became affiliated with the American Manufacturers' Foreign Credit Underwriters in New York City, which he served as vice-president until 1925. In that year he left to assist in the formation of the National Gypsum Company in Buffalo.

The idea of forming the company originated in the minds of Mr. Baker, Mr. Williams, and Mr. Haggerty, when they met in Buffalo to celebrate old times in 1925. After the preliminary plans for this undertaking had been formulated, Mr. Baker set out to raise the initial capital needed to execute them.

An accomplished salesman and an aggressive business man, Mr. Baker submitted the idea to persons in the Buffalo area. Through his own resources and those available in the city of Buffalo, he procured the necessary funds to set up operations at Clarence Center, N.Y. This was only the beginning, for today National Gypsum maintains 24 plants in the United States and Canada, including the original plant at Clarence Center, which was recently rebuilt and modernized. This advancement in the nonmetallic minerals industry is indicative of the resourceful, ambitious, and progressive character of Melvin H. Baker.

As vice-president and, since 1928,

Melvin H. Baker

president, Mr. Baker has led National Gypsum in its development from a newcomer in a highly competitive field, making one product in one plant, to its present stature as a leading supplier of building materials, manufacturing over 150 products in the 24 plants. Among these are: gypsum, various types of gypsum products, lime, crushed stone, insulation, and mineral wool.

Through the years, Mr. Baker has given his time and energies to many business and community organizations, both national and local. He is at present a director-at-large of the United States Chamber of Commerce, chairman of the Construction Industry Information Committee, and a governor of the Building Officials Foundation. He is a member of the advisory committee of the Producers' Council, and of the National Industrial Conference Board. As a member and former director of the National Association of Manufacturers, he has served as head of the committee on housing and as a member of the Economic Stability Committee. He also serves as president of Tudor Plaza, Inc., and as director of the Manufacturers and Trader's Trust Company and Kellogg Petroleum Products, Inc., all of Buffalo.

During 1950, Mr. Baker was honored when he was named as the outstanding businessman of the Niagara Frontier by the Alumni Association of the School of Business Administration of the University of Buffalo and by being selected as one of the 50 outstanding industrialists to receive the Boston Jubilee Award. In addition, he was selected by the *Buffalo Evening News* as one of the 12 outstanding citizens of Buffalo for the year 1950.

He is a trustee of Westminster Presbyterian Church and serves on the advisory board of the Crippled Children's Guild of Buffalo. He also has many other active interests in the business, social, and cultural life of his community and the nation.

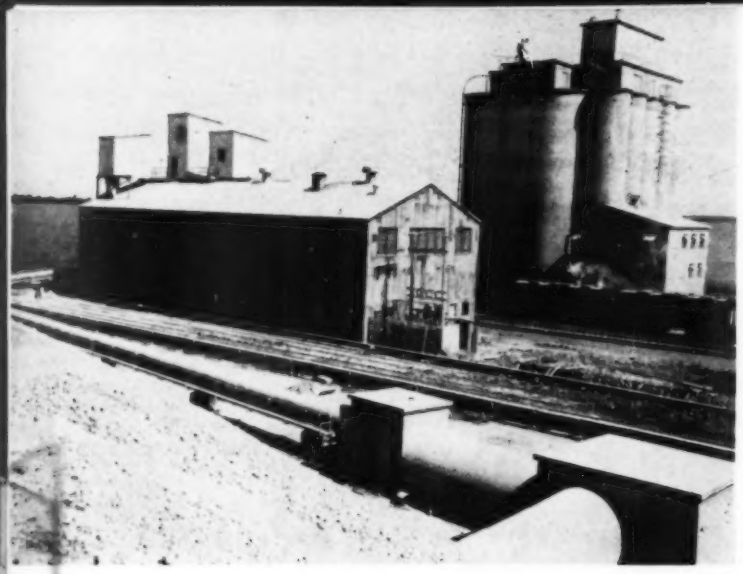
Rockwood Alabama Stone Bought by Georgia Marble Co.

The Georgia Marble Company of Tate, Ga., has purchased the entire physical assets of the Rockwood Alabama Stone Company, according to an announcement issued by James R. Cowan, president. The company made the purchase through its subsidiary, the Alabama Limestone Company.

Rockwood Alabama Stone Company began production in 1884 and has two limestone mills, housed in two buildings having more than 87,000 sq. ft. of floor space. There are also more than 1,000 acres of land, 118 houses, an office building, a store, a school, a church and other properties in the holdings of the company in Franklin County, Ala. The operation is 6 miles southeast of Russellville and 26 miles south of Muscle Shoals. It is located on the Southern Railway.

Alabama Limestone Company is presently headed by Mr. Cowan, president; S. E. Hyatt and William L. Vance Jr., vice-presidents; Granger Hansell, secretary; and R. C. Sibley Jr., assistant secretary and treasurer. All are also officials of the Georgia Marble Company, except Mr. Sibley, who has been an official of the Rockwood Alabama Stone Company. Gardner W. Putney, an executive of the Georgia Marble Company, has been named manager of Alabama Limestone Company.

Louis Ware, president of International Minerals and Chemicals Corporation, stated recently that the firm would recover uranium as a by-product at a large phosphate chemical plant under construction at Bonnie, near Bartow, Fla. Mineral phosphates (for use in animal feeds) and multiple super-phosphate will be primary products of the plant, which will cost from $10,000,000 to $12,000,000.



material can be stored on the ground at no appreciable cost, and to grind and store finished cement as the market required it. Thus the design and construction of a complete clinker grinding mill at Superior became an integral part of Huron's most recent expansion program at Alpena. Most of the output of two new rotary kilns, which were fired up in October and November, 1950, was definitely tied to the new clinker grinding capacity at Superior, and special provisions were made at Alpena for loading clinker into vessels at the rate of approximately 1,000 t.p.h.

The mill at Superior went into operation in September, 1950. It is located on property adjacent to the lime plant owned and operated by the Cutler-LaLiberte-McDougal Corporation, and that concern's excellent dock, vessel-unloading and storage facilities are fully utilized in the handling of clinker. Raw clinker

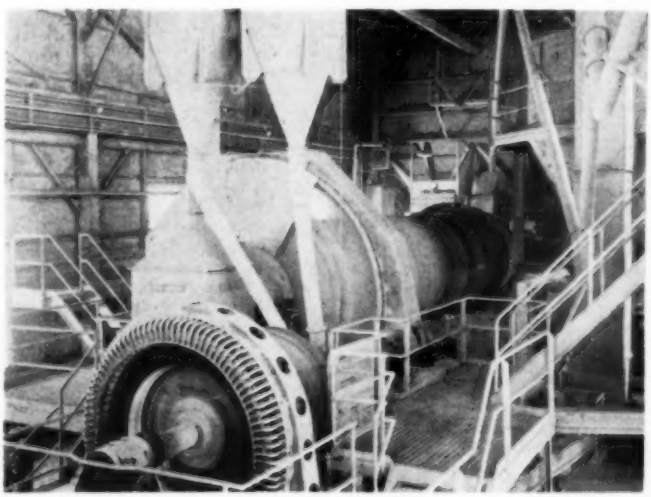
Huron's New Plant at Superior, Wis., Grinds Clinker Shipped from Alpena

another ON THE SPOT report

AS part of its concerted and long-sustained effort to meet the steadily rising demand for cement in the Great Lakes area, the Huron Portland Cement Company has built a new finish grinding mill and distributing plant at Superior, Wis., to process clinker burned at its main plant in Alpena, Mich. In this instance the somewhat unusual procedure of utilizing clinker produced at one location to make portland cement at another location more than 400 miles away, had several inherent advantages.

All but a small portion of the company's total output of finished cement at Alpena is shipped over water in special cement carriers to eleven distribution plants located at major ports on the Great Lakes. During any given shipping season enough cement must be placed in storage at the various distribution plants in the network to meet requirements during the winter months when the Lakes are closed to shipping. Due to the severe winters in the Upper Great Lakes region, the closed season at Duluth and Superior often extends from as early as November 20 to May first or later in the following year. At present bin costs, it had become almost prohibitive to create storage facilities for the tremendous quantities of finished cement required during a closed season of almost six months' duration.

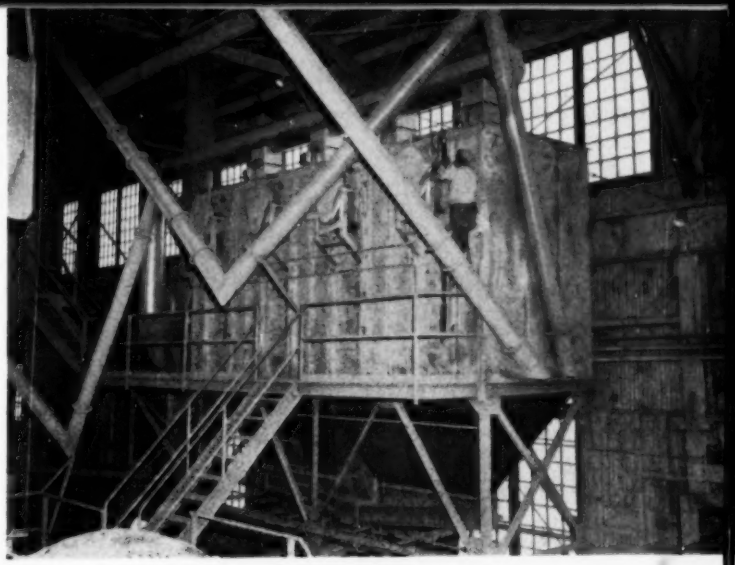
The alternative, of course, was to ship clinker into the area, since that shipped by water from Alpena is unloaded and stored over a reclaiming tunnel by a 551-ft. bridge crane which is believed to be one of the largest rigs of its type in the world. Unloading time for an 8,000-ton vessel runs from 19 to 24 hours. The total clinker storage capacity is at present about 400,000 bbl., but this can be increased by the simple pro-



• A view of the 8- by 30-ft. two-compartment tube mill at Huron's Superior plant. The drive in the foreground is an 800-hp. synchronous motor.

• Opposite page: A general view of the Huron Portland Cement Company's grinding mill at Superior, Wis. The clinker storage pile and a portion of the reclaiming conveyor system are in the foreground.

• Right: The four-section bag-type dust collector. Manual cleaning of the pipes is eliminated by avoiding horizontal runs. Eddy currents formed at the sharp bends prevent build-up of material at these points.



By WILLIAM M. AVERY

cedure of setting aside more area for the clinker pile.

The 120-ft. long reclaiming tunnel was built on the existing grade with sections of cast reinforced concrete pipe. The pipe sections have a nominal diameter of 8 ft., but to gain additional height the semicircular halves are joined by 6 in. of straight wall. Clinker is fed through a gate at the far end of the tunnel by means of a Jeffrey vibrating feeder. The storage pile has a live capacity of about 1,000 tons. Additional material can be reclaimed by bulldozing, or in an emergency by feeding clinker to the tunnel gate with the bridge crane.

A system of four 18-in. wide Barber-Greene belt conveyors delivers the clinker to the plant elevator.

• Right: Francis Collins, assistant superintendent, and Carl Christianson, superintendent of the grinding mill and distribution plant.

Beyond the recovery tunnel these conveyors are now covered with corrugated metal hoods, but eventually it is planned to build complete enclosures for them.

Gypsum is delivered to the plant by rail. The handling system consists of an undertrack hopper, a screw conveyor, and a bucket elevator which discharges into a distributing spout above the storage bins.

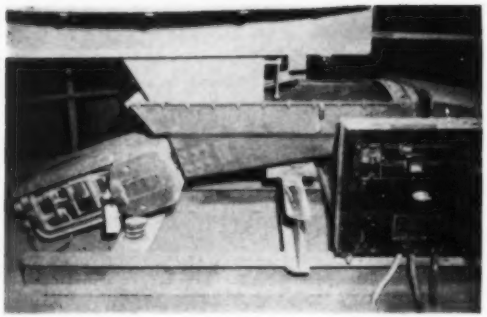
Plant will ultimately produce in excess of 2,500 bbl. per day.

One of the four identical bins which comprise the storage system is used for clinker; its capacity is between 60 and 70 tons. The adjacent compartment is used as a working bin for gypsum, and the two remaining bins are for reserve storage of gypsum, which can be reclaimed at need and placed in the working bin.

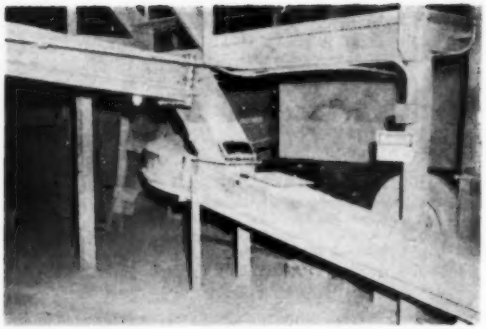
Clinker and gypsum are fed to the mill in a fixed ratio, using Jeffrey vibrating feeders in combination with Waytrols so interlocked that neither material can be fed without the other. Clinker is fed at a rate of approximately 20 t.p.h. with a 330-MC feeder. When any adjustment is made in the rate of clinker feed, the 118-AC gypsum feeder automatically adjusts upward or downward to maintain the fixed ratio between the two materials.

The feed is elevated and discharged into an Allis-Chalmers 8- by 30-

• One of the four 18-in. wide belt conveyors which form the clinker reclaiming system.



• The vibrating feeder and weighing mechanism for clinker. These units are interlocked in a fixed ratio with similar (but smaller) units which feed gypsum.



• Air-activated gravity conveyors are used in both the mill circuit and in the storage and packing plant. The unit shown at the right conveys the mill product into an elevator which discharges into the separator. The conveyor at the left returns dust to the mill circuit.

ft. two-compartment tube mill driven by an 800-hp. Allis-Chalmers synchronous motor. The 41,000-lb. total charge in the 8-ft. long preliminary-grind section of this mill is made up as follows: 4,100 lb. (10 percent) of 4-in. diameter balls; 10,250 lb. (25 percent) of 3½-in. diameter balls; 14,350 lb. (35 percent) of 3-in. diameter balls; and 12,300 lb. (30 percent) of 2-in. diameter balls. The second compartment of the mill carries a total charge of 113,200 lb. made up as follows: 17,000 lb. (15 percent) of 1½-in. diameter balls; 17,000 lb. (15 percent) of 1¼-in. diameter balls; 45,300 lb. (40 percent) of 1-in. diameter balls; and 33,900 lb. (30 percent) of ⅞-in. diameter balls. The mill consumes 7 to 8 tons of balls every 60 days.

A 16-ft. Sturtevant air separator receives the mill product and delivers finished cement to a 6-in. Fuller-Kinyon pumping system, which terminates at the storage silos. A Fuller-Huron Airslide conveys the mill product to a bucket elevator which discharges into the separator. Tailings go from the separator to a 12-in. F-H Airslide, this unit discharging into the boot of the bucket elevator which feeds the mill.

• The grinding mill operates in closed circuit with this 16-ft. air separator.

An outstanding job was done on the design and construction of the dust-collecting system, and the arrangement of piping is unique in our experience. There are no horizontal runs of pipe anywhere in the system, and sharp mitered angles predominate. Eddy currents formed at the abrupt bends clean the piping automatically, and there is no provision for (or need for) manual cleaning. A protective coating about ¼-in. thick builds up at the angles, with the result that there appears to be almost no wear at these usually troublesome points. Since the piping is always clean, the system operates constantly at maximum efficiency, and according to the plant superintendent it is doing an outstandingly good job of dust recovery. The system was designed by Knowles Associates of New York City.

The 4-section No. 864 Parsons multiple unit dust collector is equipped with four ¾-hp. shaker motors, a 15-hp. blower fan, a 12-circuit timer for the rapping mechanism, and four automatic damper valves. The system operates at a static pressure of 7 in. and exhausts 7,200 cu. ft. of air per minute. The collector draws from such critical points as the mill discharge, the mill feed, and the clinker and air separator elevators. Recovered dust is fed back into the circulating load.

The mill proper is housed in a 50- by 140-ft. steel frame building which includes space for offices, parts storage, and a small laboratory for running SO_3, loss on ignition, air, and surface area tests. Daily samples are sent to Huron's main laboratory at Alpena for physical testing. The electrical circuit for the entire mill is so interlocked that a failure at any point in the flow automatically cuts off all operating units ahead of that point.

Other features of protective control in the mill proper include the use of Bin-Dicator bin level indicators and solenoid valves at various critical points to guard against equipment failures and to prevent plugging. The F-H Airslide which conveys mill stream material to the bucket elevator serving the air separator has two such installations to guard against failure of either the elevator or the Airslide itself; and in similar fashion the Fuller-Kinyon pumping system is shut off automatically if cement backs up in the supply hopper. Other Bin-Dicator units prevent plugging in the Airslide which carries rejects from the air separator, and in other Airslides which distribute finished cement to the various storage silos.

Controls are so arranged and so centralized that the miller has full supervision of all operating equipment, including the vibrating feeder under the clinker stockpile and the four belt conveyors in the reclaiming and handling system. Colored signal lights mounted on a panel adjacent to the miller's platform show the operating status of each of the various items of equipment. Lights on another elaborate control board located in the packhouse show at a glance which bins in the storage system are full, which ones are empty, and where the pumping system is delivering cement at any given instant.

The storage silos and the packhouse are separated from the mill building by the three-track siding which serves the plant. Finished cement is delivered by the Fuller-Kinyon pump to a system of F-H

Airslides mounted on top of six 24-ft. diameter by 80-ft. high cone-bottom concrete silos. Including the two interstices, there are eight discharge points in all. Total storage capacity is about 52,000 bbl.

F-H Air Feeders and Airslides are used under the bins for reclaiming and loading out. There is also a system consisting of screw conveyors, a bucket elevator, and an arrangement of Airslides for supplying five supply bins located in the packhouse. These bins are mounted over a 4-spout St. Regis packing machine. Actually most of Huron's packing for this area is done at the company's distributing plant in Duluth, and the main function of the Superior plant is to load bulk shipments. A small setup for packing was included in the Superior layout to occasionally supplement the bagging capacity at Duluth, and for use during periods when the volume of bulk shipments might be down.

For car spotting, hauling, and even occasional switching, the plant at Superior is making good use of a versatile unit of equipment which Whiting Corporation placed on the market early in 1951. This gasoline-powered unit is known as the Trackmobile. It uses hydraulic jacking power to develop a maximum drawbar pull of 7,350 lb. by transferring a portion of the weight of any standard railroad car to its own chassis. For track travel the machine uses four standard AAR steel wheels, but there are also four rubber-tired wheels for ground travel. The latter

• Although the Superior plant was built primarily for bulk loading, the installation includes one four-spout packing machine.

are retracted hydraulically when the machine is positioned for track operation. One operator can effect the switch from rail to ground travel in less than a minute. The machine weighs approximately 6,000 lb. and has a ground speed of 25 m.p.h.

Including supervision, the total force employed in Huron's three-shift operations at Superior numbers about 24 men. As an indication of the very high efficiency which has been achieved, the mill proper is operated by a crew of only three men: a miller, one helper, and an operator for the Caterpillar bulldozer which is used to feed clinker to the reclaiming system. A single repairman services both the mill and the packhouse.

Production from the Superior mill is expected ultimately to exceed 2,500 bbl. per day. Only regular portland cement and air-entraining cement are produced at present. Carl Christianson is superintendent at Superior and Francis Collins is assistant superintendent.

Nat'l. Slag Assn. Contest

(*From page* 57)

they did not fulfill the minimum requirement of 20,000 or more man-hours of work through the contest year.

No. 3 plant, The Buffalo Slag Company, Inc., Tonawanda, N. Y., 71,857 man-hours.

Midland plant, The Midland Slag Company, Midland, Pa., 67,140 man-hours.

Converter iron and lightweight slag plant, Birmingham Slag Company, Birmingham, Ala.; 65,386 man-hours.

Hubbard plant, The Standard Slag Company, Hubbard, O.; 46,764 man-hours.

Brier Hill plant, The Standard Slag Company, Youngstown, O.; 42,196 man-hours.

Benwood plant, The Standard Slag Company, Benwood, W. Va.; 40,474 man-hours.

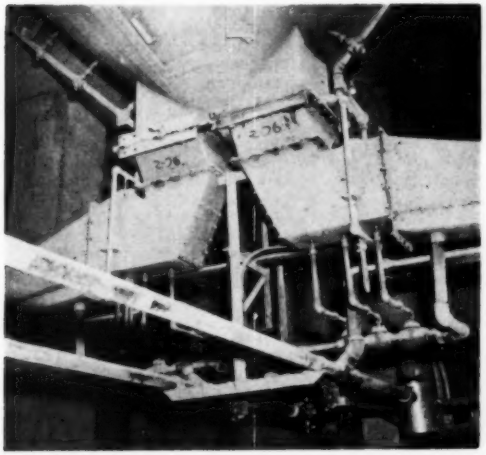
Portsmouth plant, The Standard Slag Company, New Boston, O.; 32,781 man-hours.

No. 5 plant, The Buffalo Slag Company, Inc., Erie, Pa.; 30,049 man-hours.

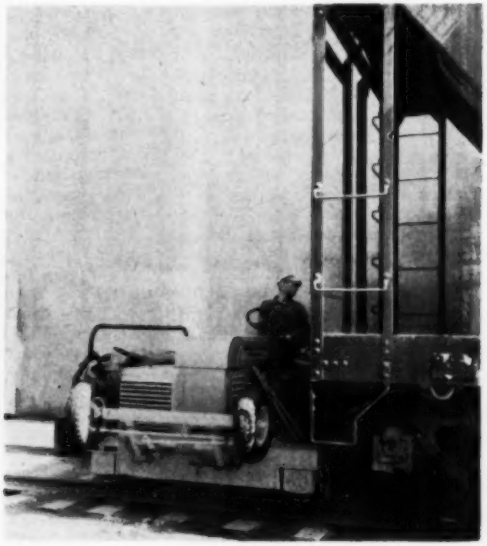
Troy plant, Callanan Slag and Materials Company, Inc., Troy, N. Y.; 23,882 man-hours.

Injury Experience of Competing Plants—The aggregate experience at the 39

(*Continued on page* 82)



• A view of the air feeders under one of the storage silos.



• Right: Car spotting, hauling, and even occasional switching are handled with this versatile unit, which is equally at home on the rails or on the ground.

WASHINGTON NEWS LETTER

Availability of Materials and Construction

another P and Q exclusive

MORE details on how the scarcity of materials will cut down the volume of construction have become available recently in Washington. It now appears that housing, which has already been cut far below its post-war peak, will in 1952, be approximately 30 percent below 1951.

The shortage of steel will probably cut the proposed school building program in half and the road building program by one-fourth. To take care of the large influx of new pupils, school system administrators were planning to continue and expand the school building program. But schools cannot be built without steel. And they are being allocated only about one-third of the steel they have requested. The road builders are in the same situation. Their allocations for the first quarter of 1952 have been cut about 20 percent below what was allowed for the last quarter of 1951. Even after an allocation has been made, many contractors are experiencing great difficulty in finding and buying steel they need.

Other types of construction will be dealt with even more harshly. In 1952 stores, theaters, and other commercial construction will get less than 20 percent of the steel requested for that purpose.

Electric Power Expansion

While general construction contracts rapidly decline, certain special kinds of construction are sure to expand. A recent Department of Commerce report points out that "industrial expansion induced by the military procurement program is bringing a large rise in electric power requirements over and above the long-term growth pattern of the industry. The new demands for electricity have caused steady upward revisions in producers' plans for future power expansion. Such plans for increased capacity will result in a continuation of the rapid growth which has occured in the industry since 1946."

The statistics demonstrate a truly phenomenal growth. Over the last 30 years, the demand for electric power has increased seven fold. Prior to 1951 the electric power requirements of industrial users increased at the rate of 7 percent per year; since then, it has been increasing at the rate of 12 percent per year. And this is still going up. Domestic users have been increasing their requirements by 15 percent a year since the end of World War II. By 1953 it is expected that the demand for electric power will be one-third greater than it was in the peak war year.

Planned expansion reported by Class I utilities to the Federal Power Commission is estimated to increase capacity as follows:

March 1951 - 67 million kilowatts
1952 - 81 million kilowatts
1953 - 90 million kilowatts
1954 - 93 million kilowatts

The power industry is not without problems in meeting these requirements. Delivery of turbines has been running behind schedule. Metals, such as copper and steel are hard to get. Even aluminum, which is used as a substitute material, is in short supply. But the industry has powerful allies in Washington. Already it has been able to get its steel allotment lifted. Its construction program will surely continue at a rapid pace.

Machine Tool Expansion

Defense requirements have accelerated the expansion of the electric power industry but they have not changed the trend. With machine tools, however, the story was different. Before Korea this industry was in a depressed state.

By 1949, shipments of machine tools had fallen lower than any time in the past decade. Output had gone down since 1942. Many firms had gone out of business.

Within a year, orders increased by 300 percent. Because the industry's capacity had been so seriously reduced, shipments were increased only 25 percent. The industry now has more than a two-year backlog of unfilled orders.

The problem of the machine tool industry is not materials. While it uses critical materials, it does not use them in large quantities. And the government will make certain that the industry is adequately supplied.

Their problem is productive capacity and man power. It takes machine tools to make machine tools. Thus it takes a long time before new machine tools reach the consumer. Furthermore, it takes skilled men to make machine tools. Almost half the workers require skills that take over three years to acquire. Only a limited number of men have the natural aptitude for the work. Beginners are lured away by high wage rates paid for less arduous tasks elsewhere.

These industries offer strange contrasts. In an economy which is changing its emphasis from peacetime pursuits to defense preparation, there are sure to be industries with excess capacity and no work and others with too much work and insufficient capacity.

By S. HERBERT UNTERBERGER

Halliburton Oil Well Cementing Revenues May Hit $85,000,000

L. D. Campbell, vice-president and secretary-treasurer, and W. D. Owsley, vice-president of the Halliburton Oil Well Cementing Company, recently stated that consolidated revenues of their firm may be increased this year to $85,000,000, as compared with last year's high of $69,292,000. Booming drilling activity in the oil industry accounts for the new record figure. The rate of increase, they added, is expected to continue next year, and the 1952 revenues may reach $102,000,000.

Part of the anticipated increase in Halliburton's business volume, it was revealed, is due to the growth of its Hydrafrac services for improving the flow of oil from new and existing wells. This new process, developed in 1949, accounted for $5,201,000 of the firm's revenues in the first eight months of 1951.

Mines Bureau Announces Minerals Div. Appointments

Several new appointments on the staff of the U. S. Bureau of Mines have been announced. Charles W. Merrill, chief of the Base Metals Branch, was named assistant chief of the Minerals Division, of which Lowell B. Moon is the chief. Succeeding Mr. Merrill as head of the Base Metals Branch is Charles H. Johnson.

Waldemar F. Dietrich, formerly chief of the Rare and Precious Metals Branch, became chief of the Ceramics and Fertilizer Materials Branch, while Richard H. Mote was named his successor. Helena M. Meyer was appointed assistant chief of the Base Metals Branch, the post left vacant by Mr. Mote.

Pacific Coast Aggregates, Inc., has purchased and is presently operating the business of the Cache Creek Sand and Gravel Company near Yolo, Calif. This brings to 11 the number of producing plants of the firm in northern California. Pacific Coast also has 19 distribution plants and warehouses.

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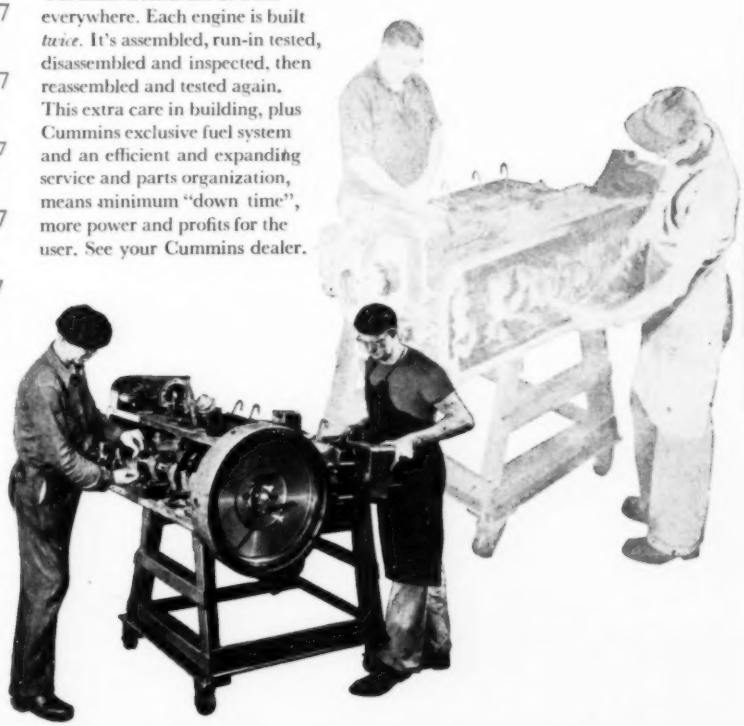

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F. M. Reeves & Sons Operate Modern Sand and Gravel Plant at Hoban, Tex.

Make available vitally needed materials for rich irrigation farming area in West Texas

another ON THE SPOT report

WITH the introduction of irrigation farming in southwest Texas some years ago there was created almost overnight a prime market for high-grade aggregates to be used in the construction of concrete-lined ditches, paved roads, and other service structures urgently needed in the development of the area. Much of this demand has been supplied by a modern and exceptionally well designed sand and gravel plant located near Hoban, Texas, some 20 miles south of Pecos. Owned and operated by F. M. Reeves & Sons, Inc., of Pecos, the plant is set up to crush, screen, and wash close to 300 t.p.h. of materials ranging from 200-mesh sand to 1½-in. crushed rock for concrete.

The deposit, an igneous rock of volcanic origin, is covered by a thin layer of dirt overburden. The upper strata of material, about 12 ft. in depth, is underlain by 18 to 36 in. of clay, below which additional gravel of good quality is found to depths of 50 ft. or more. Present operations are confined to a full section of leased land, but eventually the company plans to move its plant and operate from two full sections (1,280 acres) of its own land.

Stripping and loading are done with a Model 5 Northwest dragline equipped with a 671 General Motors diesel engine drive and a 1¼-cu. yd. Esco bucket. The haul from the pit, which ranges from ½ mile to a mile or more, is made with three units: a DW-10 Caterpillar wheel tractor drawing an 8-cu. yd. Athey side-dump wagon; a Caterpillar wagon drawn by a Reo truck; and a Mississippi wagon drawn by an International ID-9 diesel-powered wheel tractor. These units discharge the pit-run material into a 50-cu. yd. underground hopper from which the plant is fed.

A Link-Belt apron feeder below the hopper and a 30-in. wide inclined belt conveyor deliver the material to a triple-deck 4- by 12-ft. Symons vibrating screen. Normally only the upper and lower decks of this screen are used, the former having 1½-in. square openings and the latter ⅝-in. square openings. Oversize (plus 1½-in. rock) drops directly from the upper deck of the screen into a 4¼-ft. standard Symons cone crusher.

A second similar screening and crushing unit is located in line with the primary unit, from which it is fed by means of a 30-in. inclined belt. This secondary unit, consisting of a double-deck 4- by 12-ft. Symons screen and a Symons 4-ft. shorthead cone crusher, can be bypassed when the plant is producing Class A gravel by adjusting a flop gate in the chute above the screen.

By WILLIAM M. AVERY

Two inclined conveyors feed material from the secondary crushing unit to a 5- by 22-ft. scrubber located at the top of the washing plant. Built in part from an old cement kiln, the scrubber has blades throughout its length, and is equipped with a conical screen at the discharge end. This screen normally has ¼-in. openings, but it is replaced at times with a section having ⅛-in. openings when it is desired to produce topping material.

The fines go from the screen to a 5-ft. wide Acme sand drag for dewatering, and are then conveyed and discharged into a stockpile, where they are allowed to drain. After sufficient drying has taken place, this material is bulldozed into pits from which cars are loaded for shipment. Water for the washing plant is pumped from a 190-ft. deep well located on the property. The pump used for this purpose is a Peerless unit with a capacity of

• A general view of the gravel plant of F. M. Reeves & Sons, Inc., at Hoban, Tex., showing one of the three haulage units about to discharge pit-run material into the primary apron feeder.

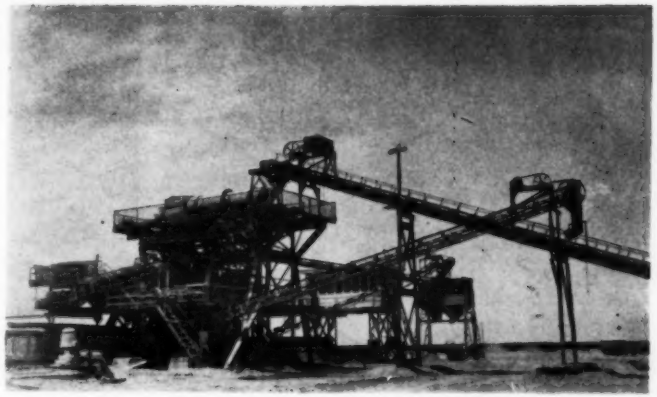
3,000 g.p.m. Waste water is flumed from the sand drag to a settling pond adjacent to the plant.

Final sizing of all coarse material is done with two triple-deck 4- by 12-ft. Symons screens arranged in parallel. Rejects from the screen section of the scrubber are split between the vibrating screens. The latter are identically equipped, the three-section top decks having $\frac{7}{8}$-, ½-, and 1½-in. openings, the three-section middle decks all ¼-in. openings, and the bottom decks all 10-mesh. All changes affecting the top size of material produced are made in the lower sections of the top decks.

Minus 10-mesh material from both screens is returned to the sand stream by means of a drag and a belt conveyor, while the rejects from the top decks go to an 18- by 31-in. Acme double-roll crusher. The roll crusher discharges onto a belt conveyor which returns the material to the belt that feeds the scrubber, effecting at this point the only closed circuit in the entire plant.

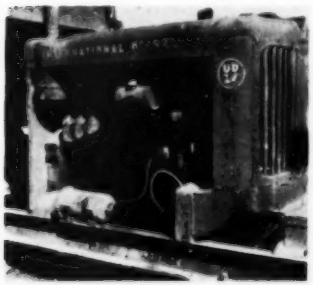
Since the plant was designed primarily as a car-loading operation, all finished materials with the exception of sand go directly from the final sizing screens into open-top cars. The cars are spotted on two parallel sidings which are straddled by the washing plant, and the loading is done through revolving chutes located under each of the screens. During loading operations the shifting and spotting of cars can be handled by remote control from a platform below the screens, so that the entire operation can be handled with maximum efficiency by the two men who are normally stationed at the loading chutes.

Under optimum conditions the plant can load out a 40-cu. yd. car (average weight about 53.4 tons) in 7 minutes, but the average is closer to being one car every 15



• All material is fed by belt conveyor to a 5- by 22-ft. scrubber which surmounts the washing plant. Oversize passes through a roll crusher and returns on the lower belt conveyor.

• A closeup of the primary crushing and screening station, showing the cone crusher and the 4- by 12-ft. vibrating screen.



• Because electrical storms cause frequent power failures, the cone crushers are separately driven by 6-cylinder diesel power units.

• A view from the top of the washing plant shows the two-track siding and the 50-t.p.h. hot-mix asphalt plant.

• The ditch lining machine developed by the Reeves organization paves a standard irrigation ditch at the rate of about a mile a day. The dump truck at the right is replenishing the aggregate supply.

• Acetylene, compressed air, and oxygen are piped underground by eight conveniently-located work stations around the plant and the storage yard. The unit shown above is the air compressor which supplies the system.

minutes. Thus the average output of Class A material runs about 200 t.p.h. For every carload of gravel produced, the plant makes about a third of a carload of sand.

With the exception of the two cone crushers, equipment throughout the plant is driven by individual Louis Allis high-torque, fully-enclosed, fan-cooled electric motors and V-belts. Even though the motors themselves are high-torque units, all the major drives are transferred through torque converters, a practice which is said to result in trouble-free starting of conveyors under load. For reasons of economy, and because of the frequency of power failures during electrical storms, the crushers are separately driven by two International 6-cylinder UD-24 diesel power units. Each of these units develops 180 hp. Controls for the entire plant are centralized in a single control house, but separate controls have also been provided for the washing plant. Magnetic switches are used throughout.

Due to the exceptionally dusty conditions under which the plant must operate, some 30 "Luber Finer" units have been mounted on both diesel and gas engines used throughout the operation. Despite the severe dust conditions, these units make it possible to run both heavy and light engines for 400 to 500 hours before changing oil. Even with this comparatively long interval between oil changes, engine protection is said to be excellent.

All materials produced at the Hoban plant are shipped by rail to Pecos, Texas, and from there by Texas Pacific and Santa Fe to final destination points. The materials fan out to such distant eastward points as Odessa, Midland, Big Spring, and occassionally even to Abilene, and to Carlsbad and Lovington, N. M., to the north. A large share, perhaps over 90 percent, of the total output goes to ready-mixed-concrete plants in these and other cities.

In addition to concrete aggregates, the plant produces all types of topping stone and hot-mix aggregate. When the latter material is to be produced, the water is cut off and the scrubber is by-passed, since it is desirable to retain the fines as a binder. Since the pit-run material is quite dry, there is no difficulty in running this hot mix material through the plant. A small amount of blow sand is generally added to meet specification requirements regarding fines. The material has been widely used in street and highway paving, and for airbases and airports throughout the area served by the plant.

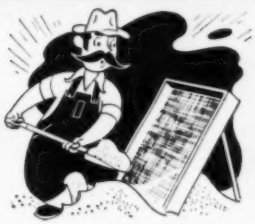
To provide an additional outlet for pit-run material, the company installed a 50-t.p.h. hot-mix Madsen asphalt plant early this year. This installation incorporates an oil-fired rotary dryer, a Clayton forced circulation automatic steam generator, and a 2,000-lb. Madsen batch mixer. Since the pit-run material contains relatively little moisture, the drying operation presents no serious problems. Facilities are available for the addition of minus 30-mesh material when needed. Water and a primer are added to the mix to prevent the material from setting as it cools. The loading belt under the mixer is reversible, so that railway cars may be loaded from one end and trucks from the other. A 50-ton car can be fully loaded in about 50 minutes.

Because of the somewhat isolated location of the Hoban plant, a whole-hearted effort has been put forth to make the operation as self-sufficient as possible. Considerable quantities of materials are purchased at scrap price and stored in the yard, so that virtually any normal requirements for building or maintenance purposes around the plant can be met from stock. To facilitate work around the plant itself and in the material storage section of the yard, acetylene, compressed air and oxygen have been piped underground to eight conveniently located working stations. These are so distributed that it is possible to set up for work almost anywhere on the property in a matter of a few minutes. The four working stations in the yard have steel booths for protection from the weather. Outlets are available at each of the stations for the operation of portable electric welding machines. Two 300-lb. acetylene generators, and two banks of oxygen tanks each containing 10 units, supply the system. Air is piped to the various points of use from a stationary Gardner-Denver compressor.

The company's contribution to the development of the area through irrigation has gone far beyond the stage of just supplying aggregates. It has developed an entirely successful ditch lining machine which batches, mixes, and places concrete for irrigation ditches of standard cross section at the astonishing rate of 650 linear ft. per hour, or about a mile per day. The entire apparatus is mounted on a large truck-trailer chassis, and power for the 14

(*Continued on page* 88)

Screenings



by William M. Avery

ONE of the minor, but more persistent, vexations we cope with in our field coverage of the pit-and-quarry industries results from the difficulty of finding a specific plant after we have exhausted the information contained in the operating firm's post office address. In locating his post offices Uncle Sam has shown an almost Olympian indifference to the geographic disposition of the nonmetallic minerals, with the result that when we pull into the community in which a company we are seeking receives its mail, about all we can be sure of is that we're probably in the right hemisphere. The eventual rundown

of the plant may prove to be a baffling assignment even for a corps of gifted Pinkerton agents.

Over a period of time we have developed (and ultimately discarded) about as many systems for this operation as have been developed (and ultimately discarded) for winning at roulette. One of our first schemes was to make a forthright inquiry at the post office shown on the company's letterhead. We soon discovered that among the government's voluminous and inscrutable regulations for postal employees is a blanket instruction to refuse all requests for information concerning the location of individuals or companies. So far as Uncle Sam is concerned, anyone demented enough to want to visit Joe Doak's gravel plant is obviously up to no good.

For a while we followed the practice of deferring the purchase of gasoline until we reached the town nearest our objective, where we would pull into a service station and ask for directions while the tank was being filled. This had at least one definite result: we ran out of gas with monotonous regularity. The method had other drawbacks, all usually related to the proprietors' excessive desire to be helpful. If they had some acquaintance with the place we were looking for, their instructions were invariably based on the quaint assumption that we were one of the original settlers of the locality, and knew precisely at which road intersection the school superintendent's youngest daughter almost got run over by Quality Bakery's panel truck in the Fall of 1937—or was it in the Spring of 1938?

Often as not the bloke who waited on us had never heard of Joe Doak's gravel pit.

"Hey, Al!" he'd yell to the mechanic. "Where in hell is Doak's gravel pit?"

Al, disclaiming knowledge, would shout to some one else, and pretty soon half the able-bodied male population of the community would be gathered around our car engaged in spirited debate. In the time it took to break loose from one of these clambakes we could easily have located the plant with a divining rod.

Another technique we've tried is to cruise around until we'd spot a truck with Joe Doak's name on the side. If the truck was empty, we'd deduce that it was headed for the plant, and would tail it in the best whodunit tradition. Often as not, after eating his dust for many a weary mile, we'd discover that it was the driver's day off, and he was headed for his girl's house in the middle of a swamp, or on top of a mountain, three counties away. We've really seen a lot of the hinterland in this fashion.

Of late we've lost our faith in systems, and have taken to improvising. We've installed a compass in the car, and are currently investigating the possibilities of radar and supersonic equipment. If any of our readers happens to have an old crystal ball kicking around, and would care to donate it to the cause, we might give that a whirl, too.

Goody!

"IS there," asks an advertisement in the *Sewage Works Journal*, a professional friend or associate for whom it is always difficult to select a suitable nonpersonal Christmas gift? Here's one suggestion that will answer the problem for you—give him a copy of the 20-year Index to *Sewage Works Journal*."

We assume it'll be gift-wrapped and labeled "No Peeking Until Christmas".

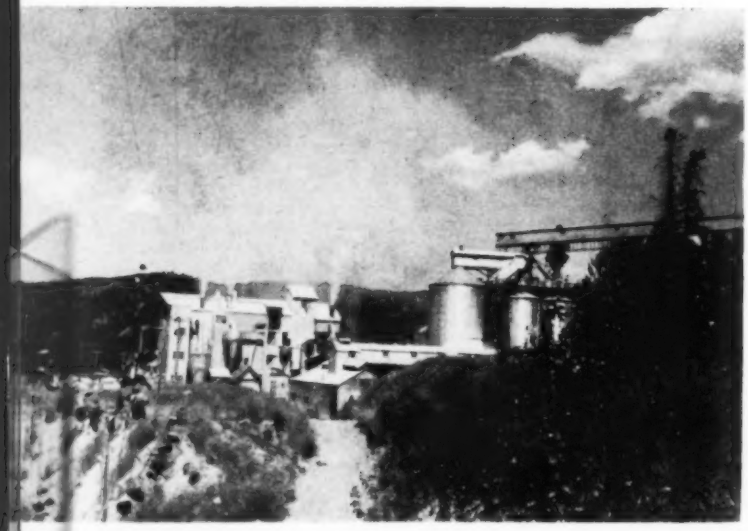
Skoal!

WE understand that Midwest Solvents Company of Atchison, Kansas, has leased a worked-out limestone mine near that city for the storage of alcohol belonging to its customers. The property, which was leased for a 10-year period from the George W. Kerford Quarry Co., is just a hoot and a holler from the huge U. S. natural cooler, in which the government, prompted by heaven only knows what motive, has stored several millions of tons of surplus eggs. It is to be hoped that the custodians of these national treasures can get together on neutral ground once in a while for a noggin or two of egg-nog.

Thanks For Nothing Department

THE Office of Price Stabilization has announced that tombstones are exempt from price controls. The reason for this dispensation, according to Director DiSalle, is that they "are of insignificant importance to the cost of living". We suppose he would concede, however, that they have some bearing on the cost of kicking the bucket—one of the relatively few proclivities of human beings not presently subject to bureaucratic control.

From Remote Mountain Mine



Zonolite's main plant, located about half way down Zonolite Mountain, near Libby, Mont., between the quarry and the loading station. Here the raw material is milled, sized, and concentrated for shipment to expanding plants all over the world.

By HARRY F. UTLEY

another ON THE SPOT report

VERMICULITE (hydrated magnesium - aluminum - iron silicate) is a micaceous mineral which exfoliates when heated. In its expanded form it is widely used as an insulation material and as an aggregate for lightweight plaster and insulating concrete. There are scores of other less important uses. More than 50 plants are presently engaged in processing or expanding the mineral for the market throughout the United States, Canada, and foreign countries.

While deposits of vermiculite are widespread, very few are of commercial value other than those owned by the Zonolite Company. These are located near Libby, Mont., and at several locations in South Carolina, and account for the major part of the recorded production.

Chief source of the supply is at Libby, where about 140 workers are employed in the mining and concentration of the ore. From here the concentrates are shipped to the various exfoliating plants owned or licensed by the Zonolite Company. Since expanded vermiculite weighs only 4½ to 10 lb. per cu. ft., it is too bulky to ship any great distance. The concentrate produced at Libby, however, is fairly heavy and can be shipped at far lower rates, making the production of the lightweight end product near the local markets the logical procedure.

Discovery and development of the Libby deposit began in 1919 on what has come to be known as Zonolite Mountain. Initially Zonolite operated on one side of the hill, and the Vermiculite & Asbestos Company, later known as the Universal Insulation Company, on the opposite side. Both operated on a small scale in competition until they were merged as the Universal Zonolite Insulation Company in 1939. A few years later the present name, the Zonolite Company, was adopted.

Each year since 1936 the company has carried on a program of expansion and improvement, as production and sales of vermiculite continued to soar with the development of new uses and broadened markets.

Color, physical appearance, and

Zonolite operates 9 expanding plants in the United States; and there are 30 licensee-operators in this country, 7 in Canada, and 10 in foreign countries.

The Zonolite processing plant at Dearborn, Mich.

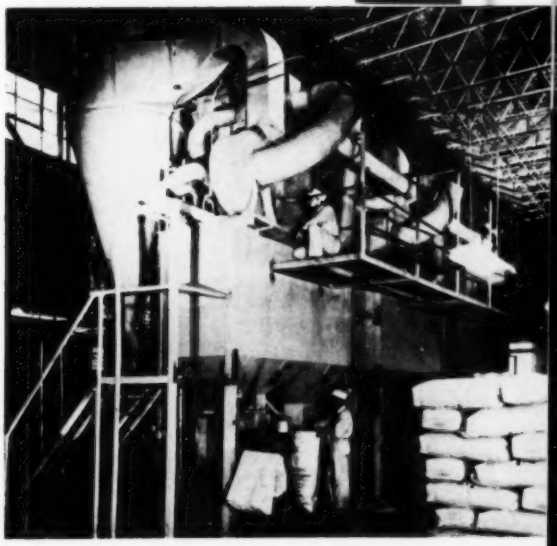
To World-Wide Market

This view shows the main plant and the covered conveyor which transports the raw material from the primary station at the quarry. (Note the end of the conveyor at the right of the illustration on the opposite page.)

the degree of exfoliation vary, but the vermiculite at Libby is dark gray to black for the most part, with the characteristic micaceous structure of cleavage which splits into thin laminae, or flakes, quite readily. During exfoliation it expands at right angles to the planes of cleavage into long, wormlike bits. (The name, "vermiculite", comes from the Latin *vermiculari*, meaning "to breed worms".) The present quarry is at approximately 4,000-ft. elevation near the top of a rounded summit. Little stripping is required, and the vermiculite is quarried on 18-ft. benches. Only the waste material, a rock which is mostly syenite intruding as dikes at irregular intervals, need be drilled and blasted; the vermiculite itself is soft and spongy and is dug and loaded by two Northwest 80D crawler-mounted 2½-cu. yd. shovels. The waste material is trucked away to a dump in a canyon nearby so that the entire level is advanced. Quality of the ore varies in occurrence and is mined selectively by the shovels as (1) high-grade, (2) medium, or (3)

Below, left: This conveyor carries the material from the bins to the loading station across the Kootenai River. The suspension-type conveyor has a clear span of 440 ft.

Below, right: One of the recent models of Zonolite expanding plants. Each furnace of a new plant produces enough vermiculite aggregate to plaster 1,300 homes per month.



low-grade. The shovels load a fleet of eight Euclid diesel-powered end-dump quarry trucks which carry 18-ton loads down the slope to the primary plant. Each unit is equipped with a Hydrotarder to control down-grade speed.

At the primary plant the Euclids discharge into a hopper spanned by grizzly bars spaced 12 in. apart, the rejects being waste rock. A Link-Belt 5- by 12-ft. double-deck vibrating grizzly with 4-in. and 2-in. openings effects the primary separation. The vermiculite ore is well fragmented during the digging and loading operations, so any plus 4-in. material is usually rock waste. When a face of high-grade ore is being processed, the plus 2-in. rejects are passed to a Stedman 18- by 20-in. hammermill. The mill product joins the throughs for transportation to the plant. On the low-grade ore, the plus 2-in. may optionally be ground in the hammermill or wasted. All the minus 2-in. ore is sent to the mill, however, via a 185-ft. raise to a 24-in. by 1,300-ft. belt conveyor leading to the mill-feed bins. A section of this conveyor about 440 ft. long is below ground and the remainder in an enclosed gallery. It is of interest that these operations are carried throughout the year in an area where the temperature may drop to 40 deg. below zero in the dead of winter.

There are five ore bins at the mill with a combined live-storage capacity of 2,000 tons. Loading these from the conveyor is by means of a remote-controlled distributing spout. The bins are vermiculite insulated and electrically heated to prevent freezing and hang-ups during cold weather. Each bin stores ore of the designated quality depending upon the face or area of the deposit being worked. Testing is carried on constantly at the faces in the quarry. The mill which draws upon these surge bins operates on a 24-hr. 6-day week, while the bins can be supplied with sufficient material for an around-the-clock full day's mill schedule in about 4 hrs. This allows the quarry sufficient time as a 2-shift operation to haul away the waste, do clean-up work, and engage in development.

The mill currently is processing about 1,200 tons of raw feed daily, yielding about 525 tons of sized concentrates. From the bins, Reeves variable-speed feeders put the vermiculite on a series of cross belts which feed a 16-in. by 125-ft. blending conveyor. Merrick Weightometers served to measure and control the proportions of the blend. High-grade and a combination of the lower grades are usually milled separately. A dry process is used throughout.

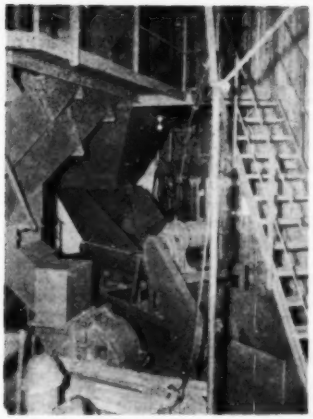
All the material is first subjected to drying, 4- by 20-ft., 5- by 32-ft., and 5- by 60-ft. rotary driers being used. All three driers are force-draft, oil-fired, parallel-flow units equipped with the necessary controls and instruments. Moisture is reduced to about 10 percent at the point of discharge and the dried material is elevated to a battery of vibrating screens which do all the sizing prior to concentration.

This writer cannot recall a single plant in the industries covered which employs as many vibrating screens as does the Libby installation—a total of 62! Nearly all of these are Allis Chalmers Aero-Vibe 3- by 8-ft. enclosed double-deck units. Both square and slotted mesh are employed in the screening process to separate the ore into the six sizes commonly demanded by the market. Some air separation is also used on the finest product. A cyclone dust-collecting system connects to the various mill components. The system, designed, built, and installed by the company, is exhausted by Sturtevant and Sirocco fans.

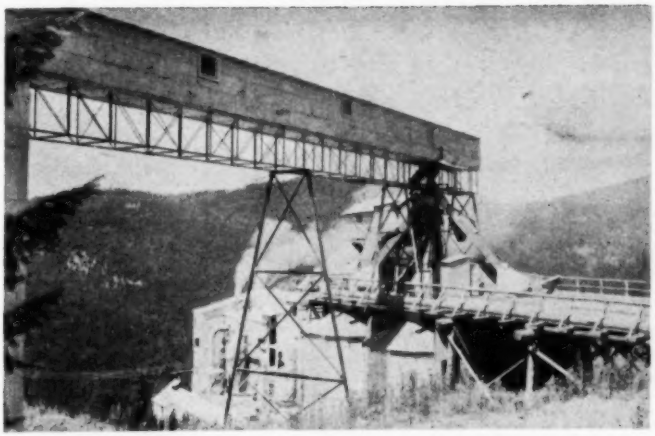
After sizing, the vermiculite is subject to concentration. This is achieved in a multiple installation of selective crushers. In theory and practice, the pure vermiculite, being a soft and flaky material, passes the

Here a shovel is loading vermiculite ore in the quarry. Occasional rock-like dikes of syenite are encountered. This is waste material and is blasted out and hauled away, so that the entire level may be advanced.

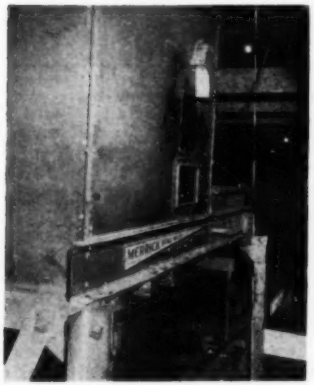
One of the quarry trucks dumping a load into the hopper at the primary plant in the quarry.



At the quarry primary plant the initial separation is done by a vibrating grizzly and the first reduction by a hammermill.



A spout (remote controlled) distributes the raw material coming off the enclosed conveyor to five mill-storage bins with a combined live storage capacity of 2,000 tons.



One of the conveyor scales used to proportion the material onto the blending belt leading to the milling equipment.

These hammermills are but a few of the many and varied types of crushers used in the mill for the dry concentration of the vermiculite.

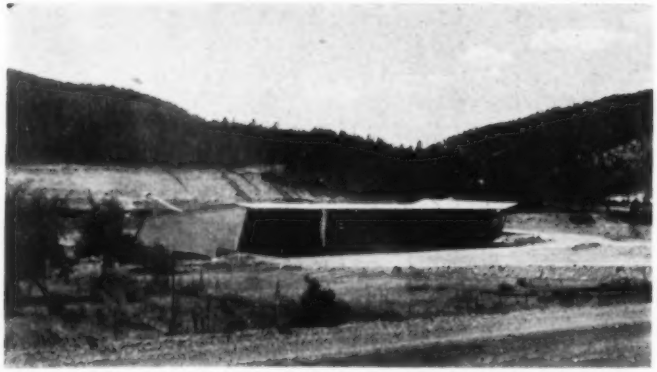
A loaded skip car of finished raw concentrate pulls an empty car up to the mill; no motor or engine is required.

various crushers without structural damage or alteration of size or shape, while any cubical particles of rock are shattered to dust and removed as such, leaving only the concentrate. This finished product is then elevated to hoppers before being lowered down the mountain by 1½-ton skip cars to the finished truck-loading bins.

The finished concentrates are subject to frequent tests in the Zonolite laboratory for screen analysis, ignition loss, impurities, and volume yield. The inherent expandability of different vermiculites varies, and the volume to which a given size will exfoliate is quite important to the purchaser of concentrates. This, too, is determined and is usually expressed as cubic feet of expanded material per ton of concentrate.

From the truck-loading bins to railhead, a distance of 3 miles down a 9 percent grade, the product is transported by a special Kenworth diesel-powered Hydrotarder-equipped truck which carries a 25-ton payload. Until recently, the rail loading station was located in Libby proper, but the trucking distance has now been halved with the establishment of new facilities on the banks of the Kootenai River. The big truck now dumps into a series of bins, canopied for protection from the weather, and located on the north bank of the river. Recovery is by a tunnel and gates feeding the concentrates onto a continuous belt, which emerges from the tunnel and crosses the river for a distance of 600 ft. The carloading station on the south bank is on the main line of the Great Northern Railroad, which skirts the south bank of the Kootenai at this point. Belt deliveries are weighed out by a Fairbanks-Morse conveyor scale. Tunnel gates are controlled by the operator on the opposite side of the river. A 50-car-capacity spur track has been laid at the loading station and lined box-cars carry their 45-ton cargoes of concentrates from this point to expanding plants in the United States and Canada. Material for export requires special packing, and this is still done at the old loading dock in Libby.

At this writing, the Zonolite Co. itself operates nine expanding plants, one each in Libby and Travelers Rest, Mont.; Chicago; Dearborn, Mich.; Pittsburgh; Albany, N. Y.; Trenton, N. J.; Little Rock, Ark.; and Nashville, Tenn. There are, besides, 30 licensee-operated plants in all parts of the United States and 7 in Canada. Ten foreign-licensed plants operate in such faraway places as Italy, Venezuela, Hawaii, Arabia, and Switzerland.



The storage bins on the Kootenai River hold more than 15,000 tons of finished concentrate. The loading station on the railroad is across the river.

Equipment for these plants is all manufactured at the mill near Libby. The discovery of a modern machine shop and fabricating factory in a mountainous, remote area where deer, elk, moose, or an occasional grizzly bear may frequently be seen is in itself a surprise to the visitor.

A standard expanding-plant installation includes mechanical unloading equipment which carries the vermiculite concentrates from boxcars to storage bins. Hough Payloaders move the ore from the bins to a hopper on the expanding plant. From the hopper the material is fed at a constant rate to a bucket elevator, which drops it into a gravity-fall, vertical oil- or gas-fired furnace that exfoliates the vermiculite almost instantly at a temperature of about 2,000 deg. F. The ore, having previously been sized with almost laboratory accuracy, is subject to no further sizing after exfoliation, which is in the approximate ratio usually of about 10:1. The expanded product then passes to an air-separator, where any remaining rock is removed, thence to a cooler which reduces the temperature rapidly for easy handling. Finally, the finished product is packed in 2- or 4-cu. ft. paper bags and properly labeled for shipment to dealer or distributor. Production is at the rate of about 320 cu. ft. per hr. per furnace. Most plants are equipped with two or more furnaces.

Graduation of the expanded vermiculite ranges from minus ½-in. down to 100-mesh. The coarsest product is widely used for poultry litter, that in the medium-size range being marketed as loose insulation fill, lightweight aggregates for plaster and concrete, soil conditioners, etc. The finer granules are used as carriers for agricultural chemicals. There are probably a hundred other diverse uses for which the material has been found uniquely suited.

Main offices of the Zonolite Co. are in Chicago. Phillip D. Armour is chairman of the board, and A. T. Kearney is president. John B. Myers, vice-president, who maintains headquarters at Libby, has direct responsibility for production and research. R. A. Bleich is manager of the Libby Division; Ray Kujawa is mine superintendent; Harold Flatt is mill superintendent; and John Huxley, Pat Barrett, Don Redman, and Dave Robinson are staff engineers. The company also maintains a fully-equipped and staffed research laboratory at Evanston, Ill.

The company and its licensees are members of a trade association, the Vermiculite Institute, which has established high standards for the industry and the product. At the last annual meeting held in April, 1951, at Ft. Lauderdale, Fla., G. R. Stark (Texas Vermiculite Co., Austin) was elected president to succeed S. K. Robinson (F. Hyde & Co., Ltd., Montreal).

Natl. Slag Assn. Contest

(*From page* 71)

competing plants in the 1950 National Slag Association Safety Competition was improved sharply over that of the plants in the 1949 contest. The injury severity rate of 1.038 days lost per 1,000 hours of work represented a 79 percent improvement as compared with the similar rate of 5.035 in the 1949 competition. Likewise, the frequency rate was much better in 1950 than in 1949. The rate of 19.365 injuries per 1,000,000 man-hours was 24 percent more favorable than that of 25.393 per 1,000,000 man-hours in 1949.

Although more man-hours were worked at the participating plants, there were 13 fewer injuries in 1950 than in 1949. The total of 57 disabling injuries, of which two were permanent partial and 55 were temporary total disabilities, compared favorably with the record in the 1949 contest, when there were two fatal, two permanent partial and 66 temporary total injuries. The aggregate time lost or charged from all injuries in 1950 was 3,056 days, a marked reduction from the total of 13,879 days lost or charged at the enrolled plants in the 1949 contest.

The 39 participating plants in the 1950 contest were operated a total of 2,943,489 man-hours. The plants were distributed through the country as follows: 13 plants were in Ohio, 8 in Pennsylvania, 7 in Alabama, 4 in New York, 2 each in Illinois and West Virginia, and 1 each in Colorado, Indiana and Kentucky.

Causes of Injuries—Slips or falls of persons were the most frequent causes of injuries at slag plants in 1950. There were 11 temporary total disabilities from this type of accident. The next ranking causes of injury were haulage with 19 percent, falling materials or objects with 17 percent, handling materials or objects with 15 percent, and hand tools with 11 percent of the total. The most serious injuries resulted from haulage accidents. There were 2 permanent partial disabilities and 8 temporary total disabilities from this cause. Machinery accidents and slips or falls of persons also resulted in injuries with high disability

The Competition—The safety competition sponsored by the National Slag Association and conducted by the Bureau of Mines is open to any slag-processing plant. It covers work-time and injuries during the slag year, extending from April 1 through March 31. A plant may be enrolled on applications obtained from the Accident Analysis Branch, Washington 25, D. C. The enrolled plants are classed in two groups according to the man-hours worked in a plant. Operations in Group A are those working 60,000 or more man-hours during the slag year, and Group B plants are those working less than 60,000 man-hours. The operation with the best safety record in each group is awarded a bronze plaque furnished by Pit and Quarry. Employees and officials at each of the winning plants are awarded a Certificate of Accomplishment in Safety by the Bureau of Mines. Slag plants which were worked 20,000 or more man-hours during the contest year without any disabling injuries are awarded Certificates of Achievement in Safety by the Bureau of Mines.

After enrollment, eligibility in the contest is maintained by sending to the Bureau monthly reports of man-hours worked and complete reports of each lost-time or disabling injury at a plant. Injury report forms supplied by the Bureau or copies of reports prepared for compensation commissions or insurance companies may be used to report data pertaining to disabling injuries.

National Industrial Sand Assn. Meets at White Sulphur Springs

another ON THE SPOT moment

MORE than a hundred individuals, including members and their families and guests, gathered at The Greenbrier, White Sulphur Springs, W. Va., for the semi-annual meeting of the National Industrial Sand Association. The three-day meeting, from October 17 to 19, was largely given over to informal round-table discussions of industry

By WILLIAM M. AVERY

problems, although one guest speaker, George H. Roll, Requirements Division, Defense Minerals Administration, talked briefly on the subject of priority and allocation controls.

At one of the three sessions Counsel John T. Sapienza discussed in general terms the effect upon industrial sand producers of the percentage depletion allowances included in the Revenue Act of 1951. While he pointed out that the precise method of computing allowances will necessarily depend upon interpretations handed down by the Bureau of Internal Revenue, the speaker made a number of suggestions regarding such computations. Pending clarification, he suggested that the computations should include any and all expenses that can properly be allocated to mining cost, including expenses incurred in the application of all ordinary treatments of the product required to produce a marketable material. In the case of the coal industry, Mr. Sapienza pointed out, the Act clearly states that mining costs may include the expense of cleaning, breaking, sizing, and loading for shipment, and the same theory will in all probability apply to the industrial sand industry.

The entire matter, Mr. Sapienza stated, hinges to a very large extent on the precise interpretation of the phrase "first commercial stage". Until this has been clarified, he said, it will be difficult to know whether or not to include such items as sales expense, profit margin, and bagging cost in computing gross income from mining. He advised including such expenses until there has been a definite ruling against the practice. Mr. Sapienza concluded his remarks with a brief summary of the other provisions of the Revenue Act.

• Junius M. Strouss, Deckers Creek Sand Co., Morgantown, W. Va.; Jesse T. Morie, Jesse S. Morie & Son, Mauricetown, N. J.; P. W. Palmer, Browntown Silica Co., Browntown, Wis.; E. M. Durstine, Keener Sand & Clay Co., Columbus, O.; Sterling Farmer, Sand Products Corp., Cleveland, O. (N.I.S.A. president); A. Y. Gregory, Whitehead Brothers Co., New York, N. Y.; and Clarence R. Wolf, National Pulverizing Co. and New Jersey Silica Sand Co., Millville, N. J. (N.I.S.A. treasurer).

Association Counsel Theodore C. Waters reported to the group on industrial health trends in state legislation. With respect to occupational disease laws, he noted that as of December 31, 1950, 41 states* had enacted occupational disease compensation statutes, and that during 1951 such statutes had been enacted by the states of Alabama and Vermont.

"The Alabama statute," Mr. Waters said, "became effective June 29, 1951, and makes compensable what is known as 'occupational pneumoconosis'. The term includes: 'silicosis, siderosis, anthracosis, anthrasilicosis, anthracosilicosis, anthraco-tuberculosis, tuberculosilicosis silico-tuberculosis, aluminosis, and other diseases of the lungs resulting from causes enumerated in this section'. The statute is elective as to both employer and employee and contains the odd feature granting to either party the right to terminate his acceptance or election upon 30 days' written notice to the other side. Of interest is a limitation of monetary liability as of the time the act becomes effective in the amount of $4750 for disability or death with monthly compensation at the rate of $200 until the full benefits of the law are attained.

"Vermont enacted an occupational disease law that became effective July 9, 1951. It contains a schedule of compensable diseases, including silicosis and asbestosis. The statute is exceedingly well drawn and contains the rather unique feature specifically denying compensation for partial disability from any of the occupational diseases and includes a definition of the term 'disablement' meaning 'that an employee is totally disabled to perform any further work in his then occupation or in any other trade, business or occupation'. There is a limitation of monetary liability for disability or death from silicosis beginning at the amount of $400 during the first month the act became effective and increasing at the rate of $25 a

*Arkansas, California, Connecticut, Delaware, Florida, Illinois, Indiana, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Jersey, New York, North Dakota, Ohio, Oregon, Rhode Island, South Carolina, Utah, Washington, West Virginia, Arizona, Colorado, Georgia, Idaho, Iowa, Kentucky, Maine, Maryland, Montana, New Hampshire, New Mexico, North Carolina, Pennsylvania, South Dakota, Tennessee, Texas, Virginia, and Wisconsin.

month until the limit of $4,000 has been reached.

"You will recall my reference to the pending occupational disease legislation in the state of Oklahoma which was the subject of consideration by the legislature as of the time of the Hot Springs meeting. Several bills had been introduced to make occupational diseases compensable, and several legislative hearings were held with respect to them. All of these bills failed of enactment, with the result that in the state of Oklahoma employers continue to be subject to the hazard of common-law litigation for this type of injury.

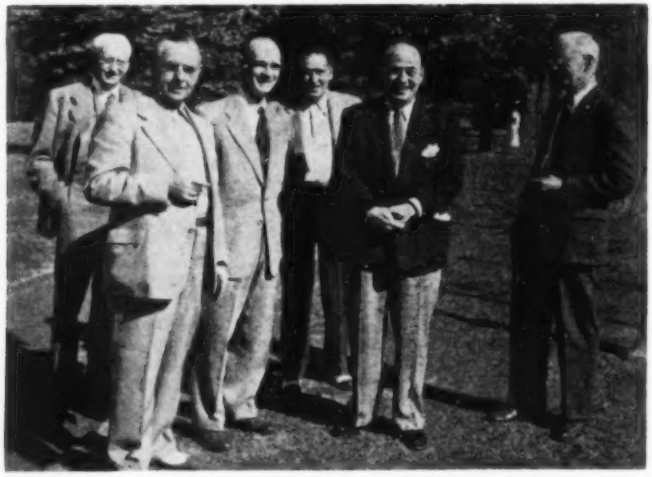
"While I am on the subject of Oklahoma, I believe you will be interested to know that the state enacted a statute proving compensation in death cases in the amount of $13,500. Prior to last year, the constitution of that state had prohibited the enactment of legislation fixing any limitation of liability in death actions. Pursuant to a constitutional amendment, the legislature was empowered to enact such legislation and did so at the 1951 session. This will relieve employers from the continuing hazard of excessive verdicts in death cases, at the same time abrogating employers common-law defenses and assuring the dependents of the decedent of the compensation provided by the statute. With respect to traumatic injuries and occupational diseases resulting in partial or total disability, the employee still has a common-law right of action, in which proceeding the employer may interpose his common-law defenses.

"With respect to legislative changes in occupational disease compensation laws in 1951, I reported at the spring meeting upon the development in the state of New Jersey resulting in the repeal of the special statute making silicosis and asbestosis compensable, so that there is now no distinction between the benefits arising from disability or death in traumatic injuries from those of occupational diseases. The amendment became effective July 1, 1951. It would be a matter of interest to know from time to time the experience of our producers under the new law, with particular reference to insurance rates to which you may be subject. I am advised that there will be no basic changes in the rate schedule before July 1, 1952; but if your experience proves to be otherwise, I think it will be of common interest to the New Jersey producers to know about that situation.

"My own state of Maryland amended our law, changing from the schedule type of law to general coverage. A new feature of the Maryland law which I believe will be of interest to you because of its novelty is the treatment of compensation for demonstrable evidence of pulmonary dust disease where capacity for work has been impaired to an extent not amounting to total disability. In such a case, the commission may grant an award in the amount of $1,000 with the right to the claimant to reopen the case within a period of five years, provided the disability becomes permanent and total or that death ensues within that period. I happen to be the author of that section of the law, and I am hopeful that it will serve to answer the legislative problem for compensation for partial disability from dust diseases. The amendment became effective June 1, 1951; and as yet, no cases have come up for hearing involving the construction of this section.

"The California compensation statute was amended in a manner that may cause serious concern to industry with attendant problems of administration to the industrial commission. By the amendment, an injured employee may assert his claim for occupational disease compensation against any employer for whom he previously worked, irrespective of the date of termination of employment. Upon the trial of the cause against that employer, other employers for whom he has worked may be brought into the case and required to contribute proportionately according to their term of employment. In most of the statutes providing compensation for occupational diseases, the last employer or the insurance carrier upon the risk as of the time of last employment is the party liable for the payment of compensation. That fixes and determines the question of liability definitely. Under the California amendment, the statute of limitations is completely abrogated, and apparently the trial of the cause against the employer selected by the employee as the subject of his claim will be dispositive of the liability of all employers in the chain of employment. Think for just a minute what that means with respect to potential liability of employers and insurance carriers.

"Of interest is an amendment to the New York Workmen's Compensation Act dealing with permanent total disability or death from silicosis. You will recall that the New York statute is the one that served as the pattern for other states in the legislative denial of compensation for partial disability from dust diseases. That feature of the law has been retained. You will also recall the escalator clause of monetary benefits for permanent total disability or death. That feature of the law was amended several years ago to grant full benefits but to relieve the particular employer from liability for the excess of the stated monetary liability by transferring that liability to the 'special disability fund' created by the legislature. The result was that since the enactment of the dust disease statute in 1936, a number of claims for compensation from silicosis had been awarded benefits in an amount determined by the escalator clause



• A. N. Farmer, Sand Products Corp.; Fred B. Clarke, R. J. Maddison, and A. Y. Gregory, all of Whitehead Brothers Co.; Arthur B. Schlesinger, New Jersey Pulverizing Co., New York, N. Y.; and William W. Collin Jr., counsel, Goehring & Collin, Pittsburgh, Pa.

which was less than the full amount for other diseases or traumatic injuries. The 1951 amendment now permits the reopening of the original cases and increases the benefits payable to those comparable to the full benefits of the law for other occupational diseases and death but relieves the employer for liability of payment of this and charges the costs to the special disability fund. The law is clearly retroactive in its effect; and if such a legislative policy would be pursued by other states, it may result in retroactive benefits for injuries incurred prior to the effective date of statutory amendments. Just where this will lead to in the matter of employers' liability and insurance rates cannot presently be determined but is certainly one of the legislative problems that our members must face in the future."

In the second portion of his report Mr. Waters discussed the exclusiveness of remedy of workman's compensation statutes.

"A recent decision of the United States Circuit Court for the District of Columbia, *Hitaffer* vs. *Argonne Co.*, 183 F. 2d 811, raises questions and problems as to the potential liability of employers to the spouse of an employee who has been injured and whose claim is compensable under the workmen's compensation statute. In view of the importance of this question, I deem it advisable to call it to your attention so that you may make certain that you are fully covered by insurance against this type of claim. In the Hitaffer case, the wife of an injured employee brought common-law suit against the employer for loss of consortium with her husband caused by injuries he had received while in the defendant's employ, even though her husband had received full compensation benefits under the statute for such injuries. The court sustained the right of the wife to maintain such an action, and the precedent of this case may well lead to similar decisions by courts in other jurisdictions with the attendant hazard of the employer being subjected to common-law trials with the determination of damages in the hands of juries.

"I am sure that you are generally familiar with the basic provisions and coverage afforded by the workmen's compensation policies. The standard policy includes the so-called paragraphs One (a) and One (b), dividing the scope of the policy and the liability of the insurance carrier to the employer. Paragraph One (a) requires the carrier to pay benefits to any claimant under the workmen's compensation law of the state. Paragraph One (b) requires the carrier to 'indemnify the employer against loss by reason of the liability imposed upon him by law for damages on account of such injuries to such of said employees as are legally employed . . .' Aside from the workmen's compensation insurance policies, I am sure that most of you carry public liability insurance which would be effective to protect you in actions instituted by anyone on acount of your public liability.

"The Hitaffer case concerned the question as to whether or not the Longshoremen's and Harbor Workers' Act of the United States (applicable in all Federal jurisdictions as a workmen's compensation act) provided exclusive remedy of the injured employee, his wife, and dependents for injuries sustained by him arising out of and in the course of his employment. Hitaffer sustained a compensable injury and was fully paid in compliance with the statute, and his wife later brought a common-law action for loss of his consortium. The language of the act in question is generally similar to that of other compensation acts in that it is provided that the liability imposed is exclusive and in lieu of any other cause of action that the injured employee, his wife, or dependents might otherwise have had. I will not burden you with the reasoning of the court in coming to its conclusion in that case. Consortium is the sum of those expectations growing out of the marital relationship to which each spouse is entitled, such as companionship, society, assistance, comfort, and affection. Loss of any or all of these is termed 'loss of consortium' and the effect of the court's opinion is that the remedy provided by the workmen's compensation statute was not exclusive of the right of the spouse to maintain such an action for the loss of consortium.

"The language of the statutes of the different states with respect to the exclusiveness of the remedy differs but the general purpose and concept supporting the enactment of compensation statutes was to make the employer an insurer of his employee, his wife, and dependents against those injuries made compensable by the statute, fixing limitations of monetary liability but denying to the employer the common-law defenses of negligence of the employee, assumption of risks, and negligence of fellow servants.

"Speaking generally, the concept

• Mrs. Jesse T. Morie, Jesse S. Morie & Son; Mrs. Junius M. Strouss, Deckers Creek Sand Co.; and Mrs. Clarence R. Wolf, National Pulverizing Co. and New Jersey Silica Sand Co.

• Mrs. Clarence H. Woods and Mr. and Mrs. A. Warsaw, all of Wedron Silica Company, Chicago.

• Miss Julia Ann Ahearn, National Industrial Sand Association; Mrs. Arthur B. Schlesinger, New Jersey Pulverizing Company; and Mrs. Fred B. Clarke, Whitehead Brothers Company.

in all compensation statutes is to make them the exclusive remedy to the employee unless (1) the employer fails to insure the risk or (2) unless injury is due to the deliberate intention of the employer or (3) unless the employer fails to comply with safety regulations prescribed by the statute. The line of authority in this country with respect to the issues raised in the Hitaffer case is divided in several states; and subsequent to that opinion, cases have arisen in various state jurisdictions, some following the ruling of the Hitaffer case, some rejecting it. Again without burdening you with detail, I would like to call your attention to the fact that in the following states, judicial opinion seems to reject the Hitaffer rule; New Jersey, Iowa, Michigan, Minnesota, California, Missouri, and West Virginia. To the contrary, however, are decisions in the states of Massachusetts, Nebraska, Oklahoma, and Texas. Please do not take these references as exhaustive but simply as indicating the differences in opinion that exist with respect to this problem.

"You may also be interested to know that in the present session of Congress House Bill 5566 has been introduced to amend the Longshoremen's Act to exclude liability for loss of services and loss of consortium. Just what will come out of the legislative effort, I do not know; but it represents a legislative effort to reverse the court ruling in this case.

"Of interest to the New Jersey producers is a suit instituted in the Essex County court involving the same issue where the trial court ruled in favor of the employer and entered summary judgment upon the pleadings. That case was decided July 9, 1951, and is now on appeal to the highest court of that state.

"The moral of this story and my discussion is simply to point out to you potential liability in a field where you may have felt secure but where in some jurisdictions, you may have a continuing liability. This liability may be protected by (1) workmen's compensation insurance and (2) public liability insurance; and I assume and trust that all member companies are so protected."

Regarding insurance rates applicable to workman's compensation, Mr. Waters noted that over the last decade, and until about a year ago, the general trend was downward. The trend has been reversed as a result of unfavorable accident experience in a number of heavy industries, and by the marked increase in benefits allowed under the compensation laws. The result of this reversal, he pointed out, has been a general increase in compensation rates.

"In the field of rating applicable to occupational diseases," Mr. Waters continued, "the national experiences has continued to be favorable. Far less claims have been made than had been anticipated. With respect to silicosis, the same thing is true; and in so far as the element of occupational disease rating is concerned, I am advised that we will probably experience decreasing rates subject, however, to change if there should be outbreaks of particular significance in our industry."

In the concluding portion of his report Mr. Waters talked about potential products liability in the sale of material by producers.

"About a year ago," he recalled, "there came up for discussion at one of our meetings the subject of products liability insurance to cover the hazard for personnel injury or property damage resulting from defective condition in products sold by our member companies. Comprehensive general liability policies insured by insurance carriers are available to you and are becoming of increasing interest to organizations that sell materials which may cause personal injury or propety damage.

"On behalf of a national insurance carrier, I have had occasion to consider the scope of coverage of policies of this type and its applicability to products sold by our industry. With respect to that feature of the policies, insuring against bodily injury, the standard form of policy includes reference to injuries caused by accident. In my judgment, that language renders the policy valueless to our companies. A suggested amendment would change the word, 'accident' to 'occurrence'. With respect to the possibility of liability for personal injuries resulting from the sale of your products, I cannot conceive of a situation where a claimant could prove relationship between the product sold and his resulting personal injuries. Our products are not inherently dangerous in the sense that they would be explosive or when coming into contact with other agents would create some unusual unforeseen hazard. Therefore, as to that feature of the proposed protection, it is my best judgment that such policies would have but little value for your liability for personal injuries.

"With respect to property damage from products sold, a different situation exists. While I am not familiar with the general sales procedure of member companies, I assume that there are no express warranties made at the time of the sale, but the law imposes the warranty that the product so sold is suitable for the purposes of the customer in its intended use of the product; in the event the products so sold would not be suited to the purpose of the customer and resulting damage occurs attributable to your products, claim may arise under this implied warranty. Again with respect to the language of the standard form of the policy applicable to products liability, the usual language assures payment of damages because of injury to or destruction of property *caused by accident*. From the standpoint of members, I am critical of that language since I do not believe that it would be sufficiently broad to cover liability that

• R. S. Lebold, Michigan Silica Co., Rockwood, Mich.; E. O. Schneider, Ottawa Silica Co., Ottawa, Ill.; Russell Cronenweth, Great Lakes Foundry Sand Co., Detroit, Mich.; Harry P. Hardy and T. H. Hardy, both of the Hardy Sand Co., Evansville, Ind.

you are seeking to insure. For those of you that have such policies, I would suggest that you consider having an endorsement to change the language 'caused by accident' to the concept of occurrence."

Recent developments in the field of freight rates, and traffic matters in general, were discussed by Counsel William W. Collin Jr. He referred to the recent increase of 6 percent in tariffs (a percent in the East) as part of the long-term effort of the carriers to keep income in balance with their steadily mounting operating costs. Although not all members of the commission were in agreement on all the points involved, Mr. Collin said that there was a clear majority favoring the increase. He noted that the increase was definitely limited to a period of 18 months, and that this was the first time that the commission had displayed such clear reluctance to grant the carriers what they wanted. This, he said, was in a large measure due to commission's belief that repeated percentage increases have seriously upset competitive relationships by creating rate difference that had not previously existed.

The cumulative effect of all increases, hold-downs and adjustments granted since 1946, Mr. Collin said, has been a jump of 67 percent in freight revenue of the carriers. There is good reason to doubt, he added, that further increases would actually benefit the carriers in the long run, since even the present rate schedules have a tendency to reduce the total volume of business. The pattern of future increases, the speaker said in conclusion, will be determined by the "state of mind" in Washington.

In the ensuing general discussion of traffic matters Executive Secretary V. P. Ahearn stated that in the third quarter of 1951, 42 of the association's 51 member companies shipped over 277,000 tons of their products by truck. A few years ago the amount so shipped was negligible. Mr. Ahearn expressed the view that it is still of the greatest importance that the industry continue to participate in tariff hearings in order to make a case for its products. He sees, however, little prospect of a change in the trend toward higher rates.

Stanton Walker, the association's consulting engineer, officiated over a brief round-table discussion of engineering problems. Reference was made to possible competitive aspects of the use of plastic molds for making castings, and it was noted that eight major companies

• Mr. and Mrs. R. S. Lebold, Michigan Silica Co.; Junius M. Strouss, Deckers Creek Sand Co.; Mr. and Mrs. George A. Thornton, Ottawa Silica Co.; and J. S. Woods, Pennsylvania Glass Sand Corp., Lewiston, Pa.

are now employing such a process in the manufacture of small parts.

There was also further discussion of the perennial subject of bagging machines in their relationship to dust control. Mr. Walker expressed doubt that the manufacturers of packing machines should be expected to develop special equipment for an industry (like the silica sand industry) which represents so small a part of the total market for their equipment.

Referring to a new type of bagging machine recently purchased by his company, Mr. Warsaw of the Wedron Silica Company, stated that test runs on small quantities of silica flour had revealed a tendency for the material to bridge over the auger. Mr. Palmer of the Browntown Silica Company reported somewhat the same experience with a machine of similar design, but he expressed confidence that the problem can be solved.

At this point Mr. Walker expressed the opinion that there can't be an easy cure-all for the dust control problem in bagging operations. It is entirely likely, he said, that some of the leakage problems occurring at the machines can be corrected, but the best approach to the elimination of dust hazard is still to be found only in adequate dust control engineering.

At the closing session of the meeting Mr. Ahearn gave a summary of the silica sand industry's position in respect to car supply, price controls, and wage and salary stabilization. He said that the associations car studies, which are based on estimates furnished by member companies, have proved to be a most reliable index of business conditions in the industry. Although the car supply shortage will not be significantly relieved before 1953, Mr. Ahearn believes that producers of silica sand will continue to get their fair share of the available cars.

In regard to price controls, Mr. Ahearn reminded the group that it is subject to the general ceiling price regulation, for which the base period is December 19, 1950, to January 25, 1951. Eventually, he said the industry will undoubtedly come under a tailored regulation. Many industries, Mr. Ahearn pointed out, have (and need) advisory committees which meet with OPS to resolve special problems not dealt with the regulations. Upon request, such a committee would be appointed by OPS to cope with the problems of the industrial sand industry, but the speaker questioned the advisability of making such a request until the need is more evident.

Mr. Ahearn made several points regarding the present status of wage and salary stabilization controls. Salaried employees, unless they are exempted as executives, are covered by the Wage Stabilization Board. He noted that Christmas bonuses are okay with the Salary Stabilization Board if there is a pre-existing bonus policy. If a percentage factor was used in 1950, it may be applied against future earnings of the result is not more than a 25 percent increase over 1950.

Speaking on the subject of priority and allocation controls, George H. Roll stated that it is the function of the Requirements Division,

Defense Minerals Administration, to help the mining industries to obtain needed equipment and supplies which are important to the defense effort. Applicants for such assistance, he noted, should tie in their reports with an accurate statement concerning the percentage of their production that is going into the defense effort.

A. Y. Gregory, Whitehead Brothers Company, New York, presented a detailed report to the group on the arrangements which have been made for the Fall Meeting of the association next year. The meeting is to be held at the Castle Harbor Hotel in Bermuda on October 15, 16 and 17. Mr. Gregory's report covered transportation schedules and rates and included a description of recreational facilities and points of interest on the island.

The last order of business at The Greenbrier was Mr. Ahearn's review of the Washington scene—always a high spot of N.I.S.A. meetings. He referred to the MacArthur incident as the "big story" of the year, since it established in fact, as well as in theory, that the President is the Commander in Chief of the nation's armed forces. The incident also resulted, Mr. Ahearn said, in the development of a firm victory policy in Korea, and in the establishment of a policy of unyielding resistance to the admission of Red China into the U. N.

Noting that the nation's wealth and future security are now irrevocably committed to its struggle against Russia, Mr. Ahearn predicted that our future policy will be one of increasing boldness, and that this major shift will be evident regardless of which political party is in power. In his view, a Republican victory in 1952 would have relatively little effect on defense appropriations, taxes, or government controls.

Although Harry S. Truman would unquestionably be the most powerful candidate the Democrats could run next year, Mr. Ahearn believes that the President is ready to retire on his laurels. On the Republican side, he believes that Mr. Taft is the most likely candidate, although he noted that a major threat to Republican success is Governor Dewey's bitter opposition to the Ohio Senator.

For the immediate future, Mr. Ahearn said, the danger of a full-dress, world-wide war has been materially reduced, although there is always a chance of our being pitched headlong into such a conflict. In his view, a hungry over-populated world is in the long run a far greater menace to peace than Soviet Russia.

F. M. Reeves & Sons

(*From page 76*)

small drive motors, which range from 2 to 10 hp., is provided by two Ready Power 25-kw. generator sets driven by International UD-9 diesel power units.

Cement, aggregate and water are replenished from supply trucks without any interruption in the operation. Mixing is done with a standard Yoder continuous mixer, and the concrete is fed at a controlled continuous rate to a slip form supported from the side of the assembly. The slip form places, puddles and finishes the concrete lining as the entire rig moves parallel to the machine-excavated ditch. The standard cross-section has a width of 5 ft. at the top, 1 ft. at the bottom, and a vertical depth of 2 ft. Linings run about 1½ in. in thickness, and the requirement for a mile of ditch is approximately 170 cu. yd. The entire operation requires a crew of about 22 men.

Prior to the construction of the Hoban plant in 1942, the Reeves organization had engaged mainly in highway construction work. At present the company operates sand and gravel plants at Arno, about 20 miles north of Pecos, and at Roswell, N. M. Operations at Arno consist primarily of screening, and most of the output goes to oil wells in the area for packing and shooting. At Roswell complete facilities are available for crushing and washing, and production amounts to about 150 t.p.h. Output at this location also includes ready-mixed concrete and concrete masonry units. Since the majority of the business at Roswell is transit-mixed concrete, the gravel plant is designed to feed the batcher through a reclaiming tunnel.

The Reeves organization is headed by F. M. Reeves, president, and Henry Reeves, vice-president and general manager. E. N. Oldham is plant manager at Hoban, and E. H. Hannon is plant engineer. M. C. Trent is manager of the Roswell plant, which employs about 25 men. About 15 men are employed on actual production at the Hoban plant, and annual shipments range from 5,000 to 6,000 40-cu. yd. cars per year.

1950 Kaolin Production Highest in Industry's History

The 1950 domestic production of china clay or kaolin was the largest in the history of the industry, according to reports of producers to the U.S. Bureau of Mines. The increase was 12 percent in tonnage over the previous record year of 1948, and 24 percent over 1949.

Eleven states made shipments of kaolin in 1950, as compared with 10 in 1949, Nevada being added in 1950. As has been the case for a number of years, Georgia ranked first with 70 percent of the total; South Carolina was second with 20 percent; and Pennsylvania was third with 4 percent.

In line with the trend for the past several years the paper, rubber, pottery, and refractory industries were the principal consumers.

The average value of domestic kaolin sold or used as reported to the Bureau of Mines in 1950 rose to $13.68, as compared with $13.43 for 1949 and $12.59 in 1948. Imports of kaolin for 1950 (122,974 short tons) increased 59 percent over 1949, although this amount represented only 7 percent of the total domestic consumption in 1950.

Austrian Cement Concerns Push Production to New High

Producing 1,280,551 metric tons of cement during 1950, the Austrian cement industry has hit the highest production mark in its entire history. Although sometimes delayed by an insufficient coal supply, the industry was able to raise production by 20 percent, as compared with the 1949 output. Lack of suitable packing material was another difficultly reported. There were also transportation troubles, although the nationalized Austrian railroad system (Oesterreichische Bundesbahnen) gives the cement industry one of the top priorities because of its important function within the Austrian economy.

Assisted by funds made available by the Marshall Plan, major cement company officials hope to boost production above the level of domestic requirements. Austrian needs for cement have doubled since 1938.

Gravel Production Is Zero But Bass Output Zooms

An old gravel pit at Plainfield, Ill., is again paying dividends—this time in fish.

The pit, about 130 acres in area, was abandoned some 12 years ago, and subsequently stocked with game fish. A year ago the property was taken over by Leonard Boyles, an experienced resort operator, who installed docks, boats, and bait facilities for anglers. As a feature of the Plainfield Fishing Resort the gravel pit furnishes good bass and other game fishing. A fee is charged for the use of boats or for shore fishing. Mr. Boyles is utilizing some of the smaller waters for the hatching and feeding of fish, so that a constant supply of legal-size fish will be available for stocking the lake.

States Push Campaigns Against Stream Pollution

By BETHUNE JONES

MORE stringent laws to curb pollution of rivers and other waters by industrial wastes and untreated sewage were enacted in a number of states this year, a survey reveals.

With many other states pushing anti-pollution programs under previously enacted laws, the trend of developments reported from state capitals throughout the nation points to increasing pressure on industries and municipalities for the construction of waste and sewage treatment facilities.

Illinois—A series of bills to strengthen efforts to curb stream pollution was enacted by the 1951 Illinois legislature as the result of recommendations by an interim study commission. One of the measures authorizes cities accused of polluting streams to issue non-referendum revenue bonds to finance the construction of sewage treatment plants. The new Illinois laws also strengthen the powers of the State Sanitary Water Board in curbing pollution.

North Carolina's legislature created a State Stream Sanitation Commission and empowered it to classify streams and order industrial plants or municipalities to halt pollution.

Ohio — A measure enacted in Ohio established a five-member board with authority to promulgate rules and regulations for prevention of water pollution. The new law gives the board strong powers over pollution abatement and sets up stiff penalties for violation.

The new Ohio act will not apply to industrial wastes or acrid mine drainage, however, until the board, after a hearing, has determined the most practical means for eliminating the pollution. Nor will the measure apply to water used in the washing of sand and gravel and other aggregates.

Meanwhile, Ohio has been pressing an anti-pollution program under previous legislation by which a number of municipalities are being required to take action toward the construction of sewage treatment facilities.

Tennessee's stream pollution act was strengthened by amendments enacted this year. One of the effects of the amendments will be to require permits for plants which discharge sewage, industrial waste, or other foreign matter into or adjacent to surface waters or streams in the state. Applications for such permits were to have been filed before October 1 with the State Stream Pollution Control Board.

Wyoming—A bill was enacted in Wyoming to strengthen the powers of the State Health Department to control stream pollution. The measure also provided for the creation of a stream pollution control advisory council composed of representatives of state agencies, industries, and municipalities. This new council recently undertook a study of a sewage disposal problem at Wheatland with the hope of setting a pattern for other communities.

Idaho's legislature passed an enabling act effectuating a state constitutional amendment ratified last November to permit municipalities to issue revenue bonds for sewage disposal facilities and other purposes.

New Hampshire legislators this year approved the New England Interstate Water Pollution Control Compact shortly after it had been signed by the governor of Vermont. These moves left Maine as the only eligible state which has not yet ratified the compact. A bill which would have permitted Maine to join the compact was rejected this year in the Maine House of Representatives, with opponents contending that Maine has too few interstate rivers to make participation necessary.

Maine lawmakers, however, replaced the State Sanitary Water Board with a new State Water Improvement Commission preparatory to launching an intensified intrastate anti-pollution program. In recently addressing the new agency at its organization meeting, Governor Payne called for an immediate start on a gradually planned pollution control program.

Utah's Senate this year called for an interim study of the pollution problem by the State Legislative Council, and pressure from other sources is mounting for the future enactment of effective anti-pollution legislation. Sewage treatment facilities are needed in most of the populous regions of Utah, according to a recent report by a Utah State Medical Association committee, which asserted that some of the facts on the sewage situation in the state are "amazing, shocking and almost unbelievable".

Minnesota—In a report on the progress of Minnesota's water pollution control program, the State Department of Health revealed that 11 communities in the state let contracts during the first half of the current year to install sewer systems and treatment plants costing more than $2,500,000. Since the 1945 enactment of the state's water pollution control law, the report disclosed, 41 projects have been completed at a total cost of $5,806,000.

Magnitude of the work still to be accomplished in Minnesota, however, was stressed by the report that 450 municipalities with a population of 160,000 have no sewer systems—or well over half of the state's total of 792 communities. Of the 342 others, it was said, 110 are without sewage treatment.

Wisconsin — Anti-pollution agencies of Wisconsin and Minnesota recently agreed to cooperate in urging cities in the two states to stop intercity squabbling about who is to blame for the pollution of interstate streams and to take corrective action.

Domestic Ball Clay Exceeds All Previous Annual Records

Sales of ball clay in 1950 broke all previous records, both in tonnage and value, as reported by producers to the U.S. Bureau of Mines. The increase over 1949 was 30 percent each for tonnage and value; there was a 9 percent gain over 1948, the previous high, in volume.

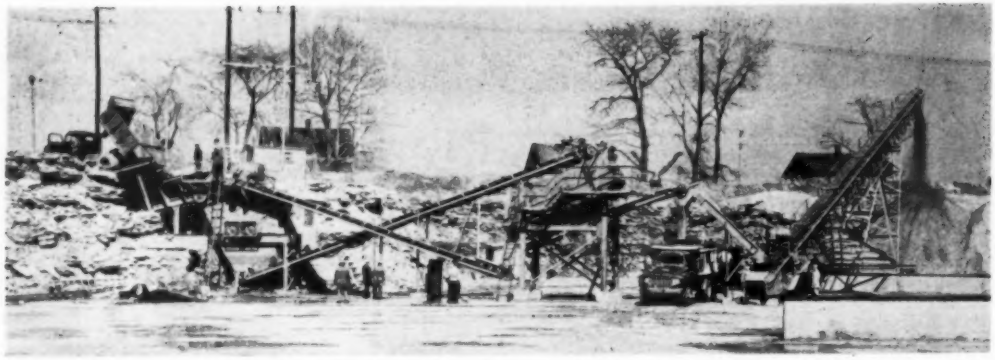
Tennessee for the eighth consecutive year has been first in output—57 percent of the total United States—and Kentucky was second with 33 percent. The balance was produced in Maryland, Mississippi, and New Jersey.

In 1950 the average value per ton for ball clay was reported by producers to the Bureau of Mines was $12.27, as compared with $12.31 for 1949.

46 Development Projects To Bolster Sulphur Supply

In a recent address before the American Institute of Mining and Metallurgical Engineers J. C. Carrington, assistant to the president of the Freeport Sulphur Company, stated that plans for a large-scale drive had been launched by the free nations of the world to end the sulphur shortage. He stated that the United States Government had estimated the world shortage of sulphur at 1,000,000 tons annually.

According to Mr. Carrington, 46 projects, including 24 in the United States, are under way to produce sulphur in different forms from various sources. These efforts are expected to yield, on the basis of present estimates, about 3,000,000 long tons of the mineral by the end of 1953.



• A general view of the new 125-t.p.h. semi-portable crushing and screening plant of the Marble Cliff Quarries Company, which produces road stone. Shown are the crusher, the screen, and the stockpiling conveyor.

Marble Cliff's New Plant Expands Multiple Operation

By WALTER E. TRAUFFER

another ON THE SPOT report

WITH the addition early in 1951 of a new 125-t.p.h. semi-portable crushing and screening plant the Marble Cliff Quarries Company now has at its Marble Cliff, O., quarry near Columbus a variety of plants producing nearly everything that can be made from limestone. Known as Plant U, this new operation produces 1½- and 2½-in. crusher run stone which is sold for road work, driveways, etc., the demand for which has exceeded the capacities of the other plants. At this location the company also operates a 450-t.p.h. railroad ballast and road stone plant, a new 450-t.p.h flux stone plant, a 900-t.p.h. washing plant, a 200-ton per day lime plant with two rotary kilns, a 50-t.p.h. pulverizing plant which makes rock dust, agstone, asphalt filler, etc., and an aggregate-bituminizing plant.

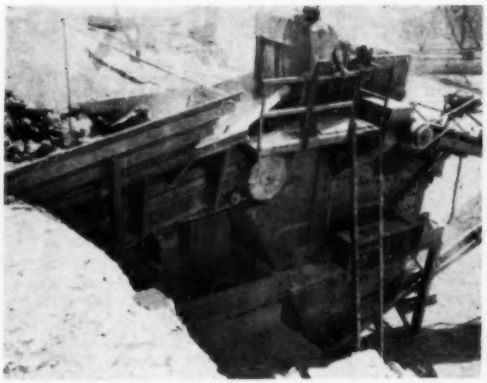
The 1,100-acre deposit at this location is about 60 percent worked out, but it is estimated that there is enough material left for 40 more years of operation at the present rate of production. The deposit is quite uniform throughout its area but consists of several strata which differ so widely that each can be used only for certain purposes. Under 2 to 15 ft. of earth overburden there is first a layer of 0 to 6 ft. of hard and abrasive limestone which is thinly stratified and contains some overburden. It is not suitable for use as ballast, finished crushed stone, etc., and had presented a disposal problem until the new plant was built. Under this layer is a 26-ft. bed of hard rock with too low an analysis to permit its use for flux stone or chemical stone. This is used for railroad ballast and road stone. The bottom 42-ft. layer is a softer, higher-analysis limestone used for flux, lime, agricultural limestone, etc. The 42-ft. chemical stone deposit is worked in two separate ledges, using electric shovels and Euclid trucks.

In recent years there had been a growing demand for rock with enough clay content to make it suitable for traffic-bound roads or for an insulation course between clay subsoil and road base for asphalt and concrete pavements. In Ohio this type of material has been in increasing demand to keep clay from working up into the stone in a macadam pavement and to eliminate heaving of concrete pavements. For several years this material had been provided by screening out 1½-in. stone from other rock, but lately it had taken too much away from the production of other types for which the demand has also been heavy. The new plant has not only solved this problem but it has also solved the problem of disposing of the top rock in order to get at the other layers.

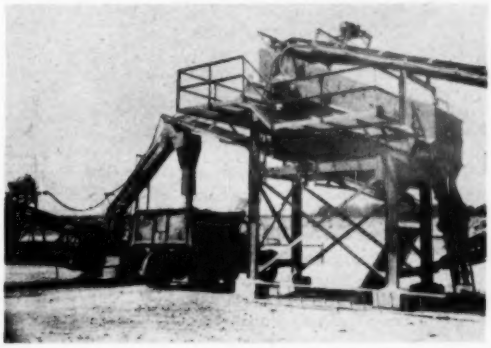
The new plant is simple in design and can be moved every few years after the length of haul becomes uneconomical. It is, however, a solidly built plant of all-steel construction with concrete footings, re-

• Another view of the plant, showing the compactness of the operation.

• A truck load of stone being dumped into the crusher.



• The apron feeder and the heavy-duty impact breaker, which does all the crushing.



• Another view of the screen which shows how the stone to be re-crushed is sent back to the crusher and the finished product is fed either to trucks or to the stockpiling conveyor.

• Left: The 5- by 12-ft. double-deck vibrating screen, which does all the sizing.

taining walls, etc. The entire operation was designed by the Universal Engineering Company, a division of the Pettibone-Mulliken Corporation, which also supplied most of the equipment. It is located in a worked-out section of the quarry where it will not interfere with other operations and where there is ample room for stockpiling. This plant has a day-in and day-out capacity of 125 t.p.h. but has produced up to 175 t.p.h. for short periods.

This 6-ft.-maximum layer of top rock is drilled with Ingersoll-Rand wagon drills for which air is provided by a Gardner-Denver portable air compressor. As the quarry is near a residential area, only a few holes are shot at one time and the Atlas millisecond delay system is used with 60 percent Trojan dynamite. Because of the thin stratification of the stone no secondary shooting is necessary.

A 1½-cu. yd. Marion diesel shovel loads this stone into 6-ton White gasoline dump trucks which haul to the plant. These discharge from the top quarry floor to the plant on the second level. At this point the stone is sprayed in order to keep down the dust. A 36-in. by 12-ft. Pettibone-Mulliken apron feeder discharges the stone into the 3240 Impactmaster heavy-duty impact breaker. This reduces the shovel-run stone to about 3-in. minus. A 30-in. by 60-ft. inclined belt conveyor feeds the stone to the 5- by 12-ft. Simplicity Model D double-deck vibrating screen. This has 2½-in. and 1¼-in. screen cloth, respectively, on its top and bottom decks. Under the screen is a compartmented box chute with gates so arranged that the overs from either or both decks can be returned to the crusher on an 18-in. by 46-ft. belt conveyor.

Only one size of finished product is made at one time. When it is 2½-in. minus, the size which is in greatest demand, the oversize off the top deck is returned to the crusher; the material over and through the bottom deck is the finished product. When the 1¼-in. minus product is being made, the materials over both decks are returned to the crusher and that through the bottom deck of the screen is the finished product.

The finished product is discharged via a 24-in. by 24-ft. belt conveyor under the screen to a pant-leg chute from which it can be loaded through one leg direct to trucks for shipment. The other leg of the chute discharges the finished product for stockpiling on the 24-in. by 120-ft. radial stacking conveyor, which is a steel truss affair of impressive appearance. It swings in an arc of 180 deg. with wheels running on rails

(*Continued on page* 94)

Limestone Dryer Output Up 20 Percent With Automatic Temperature Control

NATIONAL Lime & Stone Company, of Carey, O., uses a large rotary kiln to dry dolomite. Intended for use in glass tanks, the dolomite is pulverized and screened to size. Its moisture content must be reduced from the "as-quarried" value to practically zero moisture to meet customers' specifications and to prevent screen clogging. When screens become clogged, the entire mill must be stopped until they are cleaned . . . thus entailing a considerable delay in production.

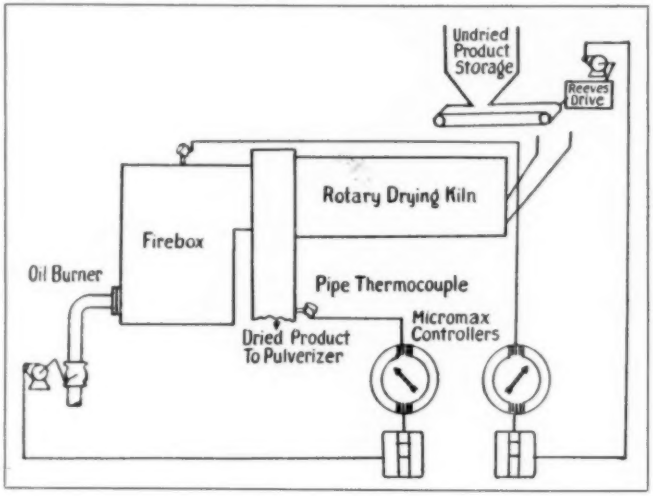
Dryer temperature was formerly controlled manually. When the demand for National's product began to run high, company officials decided to install automatic control as a means of improving dryer production. The control instrumentation was placed in service several years ago and has been operating successfully ever since.

Temperature control is accomplished by a combination of two independent control systems connected in a "cascade" arrangement, one zone of which operates on the fuel supply and the other on the feed of raw dolomite. A ½-in. pipe type of thermocouple installed in the discharge end of the kiln projects into the stream of dried product leaving the kiln, and detects actual product temperature. This thermocouple is connected to a Micromax recording controller, which operates through an electric control system to position the oil valve, and thus to throttle the fuel feed to the kiln burner as required to hold constant discharge temperature. A second thermocouple is mounted in the fire box, detecting temperature for another Micromax instrument which controls rate of kiln feed by regulating an adjustable Reeves drive on the feeder belt supplying raw dolomite to the kiln.

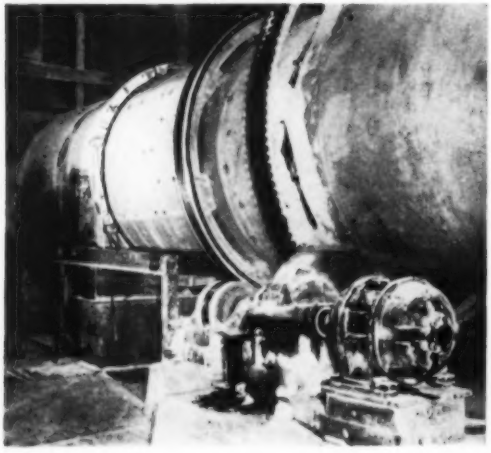
On dry days the control saves fuel by drying the product without building up excessively high temperatures. On wet days the control functions for maximum production by regulating the speed of kiln feed to the highest point consistent with safe temperature in the fire box, at the same time reducing moisture content to the desired value for pulverizing. Through proper attention to engineering details of design, in-

(*Continued on page 94*)

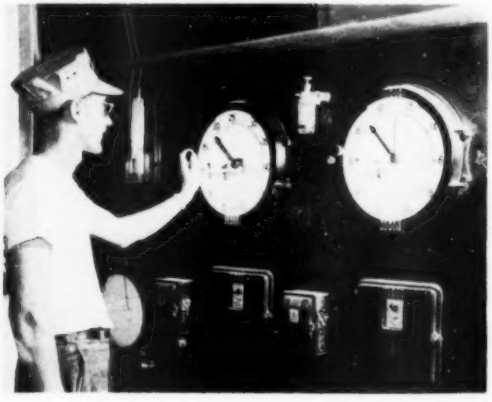
• Plan of the two combined systems for temperature control, installed in cascade arrangement.



• An overall view of the rotary drying kiln at the National Lime & Stone Company's operation, Carey, O.



• A closeup of the temperature control panel for the drying kiln. The instrument at the extreme right controls the firebox temperature by regulating raw limestone feed. The one directly before the operator regulates the oil to the kiln burners, based on the temperature of the dried product.



Cinder Mountain

Volcanic Cinder Co. Produces High-Grade Lightweight Aggregate From Deposit in S.W. New Mexico

SOME thousands of years ago active volcanos in what is now the southwestern corner of New Mexico laid down extensive deposits of high-grade scoria and lightweight cinders. In recent years such natural

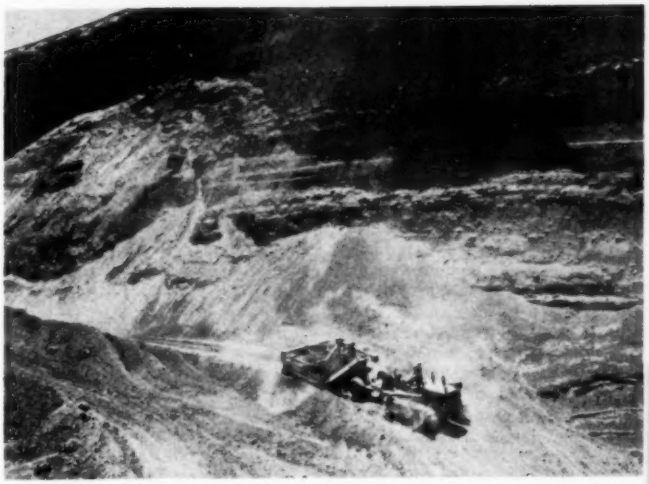
By WILLIAM M. AVERY

deposits have been recognized as a prime source of aggregate for the production of lightweight masonry units, and a number have been developed and worked extensively for this purpose.

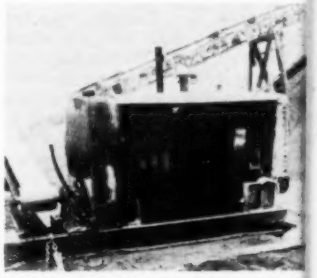
Near Aden, N. M., for example, a veritable cinder mountain is being quarried on a large scale by the Volcanic Cinder Co., a subsidiary of the Atlas Lime Co. of El Paso. Aden, a track maintenance settlement on the Southern Pacific Railroad, is located about 50 miles west of El Paso, and the material, after crushing and screening, is shipped by rail to the parent company's modern, high-production concrete products plant in that city.

Produced by intense heat during certain periods of volcanic activity, the material is exceptionally stable. An average analysis of the cinders shows the following content: iron 11.10 percent; alumina 33.35 percent; silica 45.60 percent; CaO 9.20 percent; MgO 0.65 percent; and a bare trace of manganese. The weight is such that when the material is properly graded for use in concrete products an 8- by 8- by 16-in. standard 3-core unit weighs about 27 lbs.

Overburden, ranging from a mere trace to a maximum of about 3 ft., is stripped with a 14-cu. yd. Le Tourneau Carryall drawn by an International TD-18 tractor, and the same equipment is used in recovery operations. During the 10-year period since the company started its operations a broad face has been



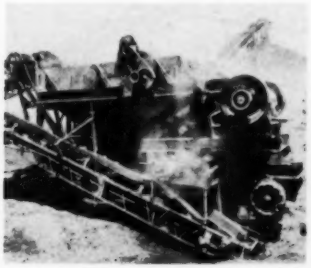
• View of the 135-ft. face of volcanic cinders near Aden, N. M. The material is crushed and screened and shipped by rail to El Paso, Tex., where it is used in the production of lightweight masonry units.



• Above: The entire plant is driven by this 73-hp. diesel engine. Electric power is not available.

• Here the tractor-drawn recovery unit is dumping material into an underground hopper from which it is fed to a portable crushing and screening plant. Stockpile of finished material in the background is used for loading the dump trucks which haul to the rail siding at Aden.

• Below: A closeup of the portable crushing and screening plant. Crushing is done with a 24- by 36-in. jaw crusher and a 14- by 18-in. double-roll crusher, the material remaining in the circuit until it passes a ½-in. screen.



exposed with a maximum height of about 135 ft. at the center. Until quite recently the practice had been to bring down the material by undercutting the face, since there were a number of practical objections, including excessive length of haul, to working the deposit from the top. This procedure became increasingly difficult and hazardous as the height of the face increased, and early this year blasting operations were attempted for the first time.

The Carryall delivers the cinders to a Cedarapids portable crushing and screening plant located about a hundred yards from the present working face. A 73-hp. Caterpillar diesel engine drives the entire plant. The material passes through a bar grizzly into an underground hopper through which it flows by gravity into a reciprocating feeder. From the feeder the material moves up a 30-in. wide inclined conveyor and is discharged over a Cedarapids 3- by 12-ft. double-deck vibrating screen which has 1-in. square openings in the top deck and ½-in. square openings in the bottom deck.

Rejects from the top deck drop into a 24- by 36-in. jaw crusher, Both crushers discharge onto a 24-in. wide belt conveyor which closes the circuit by returning the material to the main feed belt.

Minus ¼-in. cinders are removed from the circuit at the screen, dropping onto a 30-in. wide lateral belt conveyor which discharges into a stockpile. Since about 60 percent of the material is fine enough to pass the bottom deck of the screen as it comes from the deposit, the load on the crusher is comparatively light.

The stockpile, which has a capacity of about 700 cu. yd., has a tunneled roadway below it so that dump trucks, which are used to shuttle the material to the railroad, can be loaded by gravity. This provision makes it possible to continue hauling operations for a full day even though the plant is shut down. Two 9-cu. yd. dump trucks haul the processed cinders to a dumping ramp located at the Aden siding, where switching service is provided once a day by the Southern Pacific. The length of the haul is 1.7 miles, and 8 to 10 cars can be loaded in an average working day.

In 10 years of operations at the present location the company has recovered and processed an estimated 1,500,000 cu. yd. of cinders, and has made a decided gash in the side of the mountain formed by the deposit. Vast reserves of high-grade material remain to be reclaimed, but the duration of future operations will be determined to some extent by topographical difficulties. If the high working face becomes too cumbersome, as it well may, the company can readily shift its operations to an even larger deposit of identical material located about a mile and a half away.

The entire operation at Aden is carried on by an 8-man crew under the supervision of Plant Superintendent C. F. Brooks. All but a small fraction of total output is used in the production of lightweight masonry units at El Paso, where the product is rescreened just before it is used.

Marble Cliff

(*From page* 91)

on a circular concrete wall which also serves as a retaining wall for the stockpiles. Both sizes are stored separately. The direct storage capacity from the conveyor is about 5,700 tons. A Caterpillar D8 tractor with a bulldozer is being used to store over a wider area; this is being done daily to eliminate the possibility of size segregation. Efforts are being made to build up a reserve to meet the growing demand before cold weather sets in. The aim is for a reserve of about 40,000 tons. A Haiss stockpile loader is used to load trucks for delivery, but most shipments are now being made direct from the truck-loading spout.

The primary crusher is driven through Texropes by a 200-hp. electric motor, and the feeder is chain driven from the crusher shaft. All the other units, including the screen and conveyors and the swing of the stockpiling conveyor, are driven by individual electric motors through gear reducers.

In addition to the plants at Marble Cliff, the Marble Cliff Quarries Co. also operates a vertical kiln lime plant at Lewisburg, O., which has a capacity of 100 tons of quick and hydrated lime and 600 tons of crushed stone daily. The affiliated Arrow Sand & Gravel Company operates a sand-and-gravel plant at Columbus, with a capacity of 300,000 tons annually, and three modern ready-mixed concrete plants in Columbus and suburbs. Officers of the Marble Cliff Quarries Co. are as follows: H. J. Kaufman, chairman of the board; Russell S. Rarey, president; Stephen Stepanian, vice-president; E. J. Kaufman, vice-president; and Robert H. Pausch, secretary-treasurer and chief engineer. R. W. Bowen is production manager and general superintendent of all operations.

● The 24-in. by 120-ft. radial stacking conveyor.

Automatic Temperature Control

(*From page* 92)

stallation, and operating adjustment, the control system has been holding temperatures well within a 5-degree limit.

Three principal results have been obtained through the application of this control. First, production of the dryer has increased about 20 percent . . . giving added plant output without added kiln capacity.

Second, fuel savings are estimated at 25 to 30 percent. With the control constantly on the job, product temperature stays consistently at the desired value. In contrast to this performance, records show that under the previous control, temperatures frequently hit peaks of 300 to 400 deg. F. . . . indicating a sizable overheating and waste of fuel.

Third, maintenance requirements have been appreciably cut. Because excessive temperatures in the firebox no longer damage refractories, the periods between rebricking operations have greatly lengthened. In the past the fire box needed repair every spring; but after the second spring season since the control was installed, there was no evidence of need for rebricking. Furthermore, mill stoppages for cleaning screens no longer delay production.

Both automatic controls on this kiln and two others at National Lime & Stone are standard Leeds &

(*Continued on page* 98)

34th National Slag Assn. Meeting Attracts Record Attendance

another ON THE SPOT report

MARKED by a record attendance, the 34th annual meeting of the National Slag Association, held on November 14-15 in the Town Room of the Knickerbocker Hotel, Chicago, proved to be an interesting and informative affair. Important talks and discussions,

By ROGER R. NOLAN

presentations of awards to N.S.A. safety contest winners, and an excellent banquet were features of the two-day program, which was attended by over 30 members and guests.

Opening the Wednesday morning session, E. L. Flad, manager of sales, Slag Division, U.S. Steel Company, Pittsburgh, and president of the association, conducted the introduction of guests and delivered the welcoming address. Mr. Flad indicated that 1951 has been the most astounding year anyone could have conceived of in the slag industry. Co-operation of fellow members in solving one another's problems, and the willingness to further the promotion, quality, and sales of slag has become more and more evident through the years, he said.

Following the brief introductory remarks, E. W. Bauman, managing director of the association, presented the annual report. It is interesting to note that for each succeeding year, beginning with 1946, the industry has achieved a new record in the production and sale of slag, Mr. Bauman stated. In 1950 a new record was established by the iron blast-furnace slag processing industry, 24,926,033 short tons having been processed for commercial uses. This outstanding record was not achieved without hard work and considerable effort expended in the form of research, investigations, and sales promotions, he said. If present trends continue, Mr. Bauman declared, the year 1951 will provide the industry with another record.

During the year a manual on slag block, which had been in preparation for almost two years as an assignment of the staff together with the problems committee, was published and is now available for distribution, according to the speaker. The assembling and mailing of individual pictorial portfolios containing photos of outstanding slag jobs

• Left to right: W. R. Ireland, Atlanta Aggregate Co.; W. C. Ireland, Birmingham Slag Co.; and E. C. Levy, Edward C. Levy Company.

was also accomplished during the year, Mr. Bauman added.

At the last meeting of the problems committee, the situation of familiarizing architects with the fact that slag is a suitable aggregate for building construction purposes was fully discussed, the speaker reported. It was the opinion of the committee that a catalog on slag products, carried in *Sweet's Catalog* would do much to inform architects concerning the product. The matter was discussed, and the decision was left to the board of directors to be reported on later. Several suggestions were made to have the various slag companies, with the co-operation of the association, sponsor luncheon meetings throughout the country, at which architects would be invited to confer with the association's technical men.

The association's contacts with federal agencies in Washington, particularly those dealing with services or regulations that affect the industry, has continued as an important phase of association activity, Mr. Bauman said. During the last year an appreciable amount of time was devoted to various divisions of the National Production Authority in behalf of the members, concerning priorities, ratings, and other problems created by defense regulations, he reported. Mr. Bauman informed the members that an application had been made to the OPS requesting that the slag industry be decontrolled. As yet, there has been no formal reply from OPS.

Many experimental and research investigations concerning problems of the slag industry were conducted or started during the last year, Fred Hubbard, director of research reported. The association has been very active in developing ideas on expansion, durability, resistance to freezing and moisture, and insulating values, he said. One of the projects recently investigated resulted in determining the cause of failure of concrete masonry units made with air-cooled slag—insufficient moisture and water in the mix.

Results obtained thus far in the expansion test being conducted at the University of Toledo have been encouraging, Mr. Hubbard indicated. A research project concerning the corrosion of metals being buried in various types of slag is about to be undertaken, the speaker reported. The fire-test for expanded slag and other investigations involving both expanded and granulated slag, currently being conducted in the associations' laboratory, have been progressing nicely, according to Mr. Hubbard.

Winding up the proceedings of the Wednesday morning session was the appointment of special committees. Assigned to the nominating committee were the following: L. E. McDermut, president, Illinois Slag and Ballast Company, Chicago; Fred Hubbard, Midland Slag Company, Youngstown, O.; and G. A. Mattison Jr., president, Woodstock Slag Corporation, Birmingham, Ala. Named to the resolutions committee were: R. K. Plumb, American Steel and Wire Company, Cleveland, O., chairman; G. Scheuneman, vice-president, American Materials Corporation, Hamilton, O.; C. A. Barinowski, vice-president, Birmingham Slag Company, Birmingham, Ala.; and G. Snyder, Buffalo Slag Company, Buffalo, N.Y.

Highlighting the luncheon which followed the Wednesday morning session, were the presentations of the awards to the N.S.A. safety contest winners. The Wylam (Ala.) open-hearth plant of the Birmingham Slag Company won the trophy in Group A (plants working 60,000 or more man-hours) donated by Pit and Quarry. In winning the award, the Wylam plant operated 78,771 man-hours without any disabling injuries. The award was the second

successive one made to a Birmingham Slag Company plant; the Thomas plant at Birmingham had the best record in Group A in the 1949 contest. The Donora plant of the France Slag Company had the best safety record in Group B (plants working less than 60,000 man-hours)—a perfect safety record of no lost-time injuries during a total operating time of 51,275 man-hours. This plant received the PIT AND QUARRY trophy for this class at a banquet given previously at the plant. The following plants, excluding the trophy winners, were awarded Certificates of Achievement in Safety by the U.S. Bureau of Mines. Presentations were made by Forrest T. Moyer, chief, accident analysis branch, U.S. Bureau of Mines. They compiled injury-free records and were worked 20,000 or more man-hours during 1950. In addition, there were four injury-free plants which did not receive certificates because they did not fulfill the minimum requirement of 20,000 or more man-hours of work through the contest year:

No. 3 plant, The Buffalo Slag Company, Inc., Tonawanda, N.Y.; 71, 857 man-hours.

Midland plant, The Midland Slag Company, Midland, Pa.; 67,140 man-hours.

Converter iron and lightweight slag plant, Birmingham Slag Company, Birmingham, Ala.; 65,386 man-hours.

Hubbard plant, The Standard Slag Company, Hubbard, O.; 46,-764 man-hours.

Brier Hill plant, The Standard Slag Company, Youngstown, O.; 42,196 man-hours.

Benwood plant, The Standard Slag Company, Benwood, W. Va.; 40,474 man-hours.

Portsmouth plant, The Standard Slag Company, New Boston, O.; 32,781 man-hours.

No. 5 plant, The Buffalo Slag Company, Inc., Erie, Pa.; 30,049 man-hours.

Troy plant, Callanan Slag and Materials Company, Inc., Troy, N.Y.; 23,882 man-hours.

In the field of public relations, the association has become increasingly active, Mr. Bauman reported. Outstanding projects dealing with public relations which were accomplished during the past year included the following: the publicity accorded slag as a commercial commodity over the radio program, "Theatre Guild on the Air", sponsored by the U.S. Steel Company on Sunday evening, October 21; and the exhibit on slag products of the Edw. C. Levy Company at the annual meeting of the American Public Works Association held in Detroit on September 16-19.

• Presentation of a National Slag Assn. safety contest award by Forrest T. Moyer (right) to Gerald S. Snyder, Buffalo Slag Company.

The Wednesday afternoon session, directed by G. A. Mattison Jr., got under way with the reports on price regulations and wage stabilization, presented to the association by Samuel B. Perlman, assistant regional counsel, Office of Price Stabilization and Leon Rosell, regional council, Wage Stabilization Board. Mr. Perlman explained the rules governing price regulation applicable to the slag industry. He pictured the situation which will confront the industry in the next year, and ably handled questions from the various members regarding their personal problems.

Presenting the provisions of wage stabilizations covering the slag industry, Mr. Rosell explained the position of the Wage Stabilization Board in handing down approvals for pay hikes. He described the intricate collective bargaining tactics between labor and management which go on in Washington. He also reported on the positions of executives in regard to the wage situation. To provide every one with the best possible solution of individual wage problems, Mr. Rosell pointed out that the board is at the disposal of all, and that members should not hestitate to write for advice.

• R. K. Plumb, American Steel & Wire Company, and G. H. Doscher, the Granulite Company.

An open forum was held following the wage stabilization and price regulation reports. During this forum, conducted jointly by Fred Hubbard and Edw. C. Levy of the Edw. C. Levy Company, Detroit, Mich., a number of interesting talks and discussions were heard. Dr. H. Kriege of the France Stone Company, Toledo, O., presented a resume of experiments on blocks made with slag being conducted at the University of Toledo. Mr. Levy explained to the group the importance of having adequate machinery in a plant.

Having completed their general business, the association board members held their election of officers during the annual board meeting on Thursday morning. The following executive committee was approved for the next fiscal year. C. A. Barinowski (president); R. O. Dierker, Duquesne Slag Company, Pittsburgh, Pa., (vice-president); W. E. Bliss, Standard Slag Company, Youngstown, O.; R. Newton McDowell, Gary Slag Company, Chicago; and E. L. Flad (retiring president).

Fire Clay Output in 1950 Second-Largest in History

Fire clay sold or used in the United States in 1950 was the second-largest in the history of the industry, superseded only by 3 percent in 1948. Total output showed an 11 percent increase over the total tonnage reported in 1949, according to reports by producers to the U.S. Bureau of Mines. The expansion of the national economy in general and the increased activity in the refractory and construction industries in particular, were for the most part the governing factors effecting increased fire clay output in 1950. Of the 17 principal fire clay producing states only three (Arkansas, Tennessee, and Washington) reported decreases; the remaining 14 states reported increases. Ohio led with an output of 2,506,306 tons, valued at $6,-171,413.

The principal uses of fire clay in 1950 were consumed as follows: refractories—5,147,667 tons (7 percent increase over 1949); heavy clay products—4,020,357 tons (17 percent increase over 1949). Refractories and heavy clay products combined used 96 percent of the total tonnage output in 1950.

Type, quality, and geographical location determine for the most part the selling price of crude fire clay. The average value of fire clay sold or used (crude and prepared) was $3.00 per ton, as compared with $2.91 in 1949.

Shovel Crane Service Today and Every Day

THE international situation and America's increasing defense efforts have created abnormal demands for construction equipment. Among those units in greatest demand are power cranes and shovels.

This unprecedented call for new power cranes and shovels has also

By A. E. YORK
Service Manager
Link-Belt Speeder Corp.

accelerated the demands upon equipment already in use. As long as the present shortage of new equipment for normal civilian requirements exists, it becomes increasingly vital to keep existing equipment in the best operating condition. In times like these, delays and shutdowns become especially costly; they can usually be prevented by planned care and preventive maintenance.

The most important periods in the lifetime of a crane or shovel come when they are first placed in service, and the period immediately following, when the customer is becoming accustomed to the machines. That is why it is essential that this piece of expensive equipment be started off properly by qualified service men. The dealer selling the equipment is responsible for the qualifications of the service men.

A. E. York

Proper instructions covering all adjustments, care, and points of lubrication are important at the time of delivery. Since there will always be a labor turnover, it is essential that operating instructions be handed down from one operator to another in the event that the employee originally familiar with operating instructions leaves for another job.

Too often a new shovel or crane is deadlined because of improper care and lubrication after the machine has left the factory. In many cases too much grease is almost as serious as too little lubrication. Since the danger connected with lubricating certain points is covered at the time of delivery, the customer should see that the information reaches the proper person.

Systematic care and maintenance can usually be developed by following the manufacturer's operating and instruction manuals carefully. This includes not only proper care and lubrication, but also keeping the machine clean and making regular periodic inspections of the equipment—inspections which will reveal necessary normal adjustments and which will assure the proper replacement of parts at the right time.

In the case of old equipment, certain steps should be taken to prolong the natural life of the machine. A few precautions can greatly extend the time between major overhaul jobs.

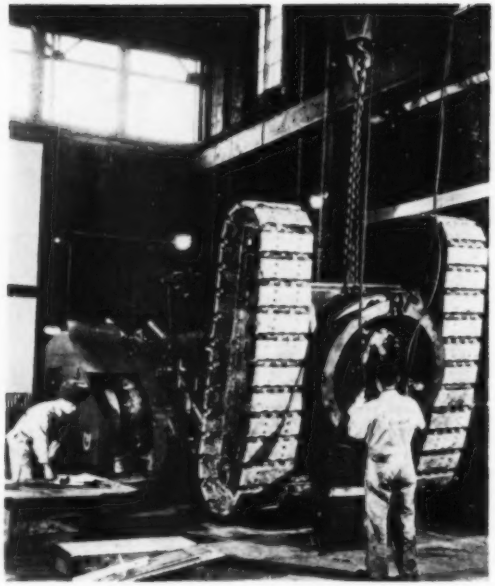
Lubricants, motor oils and greases should conform to the manufacturer's recommendations, and should be products of reputable firms. Regular intervals of lubrication will eliminate the guesswork concerning the number of hours worked. Manufacturers' charts on seasonal changes in viscosity should be followed closely.

One important detail to remember is the periodic examination of lubrication tubes. Often it has been discovered too late that a grease tube has failed or become clogged, and that grease has not been reaching the parts needing lubrication. When that happens, some bearing will fail for lack of grease, resulting perhaps in damage to a shaft or some other important part. Replacing such a shaft or part is often difficult and may result in a long, costly shutdown which could readily have been prevented by careful maintenance.

Clutches should be inspected closely to make sure they are maintained in good condition and adjustment. It should be determined whether or not the clutch is wearing properly. Linings should be examined closely and kept clean and free from grit and other foreign particles to eliminate scoring of drums. Center pins should be checked and tightened as needed. Drive chains should be kept in adjustment, and sprocket chains should be examined for undue wear. Bushings should be watched to avert shaft scoring. Engine filters must be changed at specified intervals to safeguard the power plant of the machine.

Good maintenance also entails the advance ordering of needed parts. Many parts, such as linings,

This 1½-cu. yd. shovel has its work cut out on this rock job, but the work will proceed quickly with the oiler on his toes, keeping the machine at top operating efficiency.



Major shovel-crane repair should not be undertaken without careful planning. Down time will be reduced by carefully estimating what parts will be required. Machinery should not be dismantled until the repair parts have been located.

cables, and dipper and bucket teeth are essentially wearing parts, which must be replaced periodically. It is essential that such parts be kept on hand for quick and convenient replacements. There are also other parts that, from experience, should be kept on hand to avoid costly shutdowns and delays due to the lack of such replacement items. By periodic and systematic inspection it is also possible to anticipate other required replacements and to have such parts on hand to install at the most convenient time. This is especially important now when replacement parts may not be available as quickly as in normal times, and when uninterrupted operation is more important than ever.

Machine cleanliness is paramount in good care and maintenance. Good housekeeping is conducive to good care and maintenance, and a well cared for machine is invariably also a clean machine. Pride in keeping the machine clean will instinctively encourage the operator to pay close attention to the proper care and mechanical condition of his machine. The importance of such care cannot be stressed too strongly.

Periodic cable inspection is vital in all machines. A frayed cable should be promptly replaced, particularly if it is a load-carrying cable. Although it may be subjected to little actual running wear, the boom hoist cable — which is a load-carrying cable — also should be inspected frequently, since its failure could well result in serious damage or even personal injury. In these inspections, all cable connections should also be checked.

Overhaul jobs, which in normal times may have been undertaken without too much forethought, assume major proportions in times of emergency such as the nation is currently undergoing.

First step in such an overhaul job must be to determine the extent of the job. This calls for a detailed study and examination. Ordering additional material after the original order has been sent in can be avoided by making a careful first estimate. Definite shipping dates should be obtained. Better yet, no equipment should be disassembled until all material is on hand. Quite frequently a small item out of a large order can tie up a major repair job because of some supplier's inability to live up to a promise.

Local facilities for the job to be done must be explored to make certain the job can be completed in the least possible time. If local sources prove inadequate, improvisations can usually be made. Often it is wiser to move the equipment nearer to the proper facilities for repair and overhaul.

With the present material shortage at hand, consideration should be given to rebuilding parts, especially those which can be welded to return to original dimensions. Track sprockets, track rollers, and track shoes can be rebuilt with a hard-surface rod to extend the life of these parts. Bores that have been worn oversize can frequently be welded and rebored to standard size so as to make future replacements easier. Shafting — depending upon application — can sometimes be metal-sprayed satisfactorily. When possible, a plating process should be used to salvage shafts.

Complete overhaul jobs, if properly planned, can be accomplished with the minimum amount of down time even considering the present scarcity of material.

Proper equipment maintenance is doubly important in a situation such as the nation is facing today. With material shortages and scarce replacements parts, it is vital that existing equipment be carefully serviced to provide longer life and resultant better performance.

Automatic Temperature Control

(*From page 94*)

Northrup P.A.T. (Position Adjusting Type) electric control systems. Instruments are round chart Micromax models having ranges of 0-500 and 0-2,000 deg. F. respectively for the discharge temperature and firebox temperature application. Both pyrometers operate electrically-driven valve mechanisms on the controlled elements.

Details of this installation were worked out by the Leeds & Northrup organization and Dr. Ralph B. Vogel, chief chemical engineer of the National Lime & Stone Company.

Total of 160 Exploration Contracts Signed by DMA

Approval and signing of 17 new mineral exploration project contracts in 10 states during the last half of September was announced by Secretary of the Interior Oscar L. Chapman, raising the total of such contracts to 160 since the start of the Defense Minerals Administration's financial assistance program in search of critical and strategic mineral reserves last April.

The contracts just completed cover explorations for lead, zinc, tungsten, copper, beryl, mica, columbite, antimony, and tantalum, and the projects are in ten states—Montana, Idaho, Colorado, Wisconsin, Utah, California, Nevada, Oklahoma, Missouri, and South Dakota. Cost of the new projects will be $706,304, of which the government's share will be $374,122 or 52.97 percent.

The aggregate cost of the 160 projects so far approved by DMA is $9,087,246.62, of which the government's contribution is $5,410,348.94, or 59.54 percent, while private industry's investment is $3,676,897.68. These 160 projects are in 20 states and Alaska. Colorado leads with 28 projects, followed closely by Idaho with 21, Montana with 19, North Carolina with 16, California with 12 and Utah with 10.

A folder entitled *Vermiculite Roof Insulation Bulletin* was recently issued by the Vermiculite Association, Inc. The announcement was made by William S. Steele, president of the American Vermiculite Corporation, New York, N.Y., a member-company of the former organization.

A.I.M.E. and A.M.C. Sessions Offer Outstanding Programs

By HARRY F. UTLEY

DURING the week of October 22-26, 1951, Los Angeles was the mecca of the mining industry, nearly 2,500 interested persons having been attracted to the annual conventions of the American Mining Congress and the fall meeting of the American Institute of Mining and Metallurgical Engineers. Able speakers from government and industry appraised mining under defense mobilization and

T. B. Counselman

laid plans for the industry's future in the uncertain days ahead.

For three days, October 22-24, the American Mining Congress was in session at the Biltmore Hotel, where speakers and members discussed practical problems of mining and mineral treatment, the "how and whys" of successful operations, and trends in methods and practices. One of the papers was of particular interest to pit-and-quarry operators, *Large Scale Mechanical Mining of Gravel Deposits* by Ronald C. Griffin, production manager of the Consolidated Rock Products Company, Los Angeles. In its presentation, Mr. Griffin outlined the growth and development of his company's Irwindale plant, which today is one of the country's largest commercial operations, with a production capacity of 1,000 tons of washed and graded material hourly. When first put into operation in February, 1927, this plant also had the distinction of being one of the first to make extensive use of reinforced concrete bins and steel superstructures. The original deposit adjoining the plant has been worked out and pit and plant are now more than ½ mi. apart. A 3,800-ft. belt-conveyor system now supplies the plant surge pile. (See PIT AND QUARRY, June, 1949, page 61.)

While the A.M.C. delegates were field-tripping on October 25, visiting Consolidated's Irwindale plant and observing the block-caving of limestone in the underground mine of Riverside Cement Company, at Crestmore, Calif., the A.I.M.E. opened its two-day meeting in the Los Angeles Elks Club Building. First-day sessions were devoted to mining, and the final day was given over to Petroleum Division.

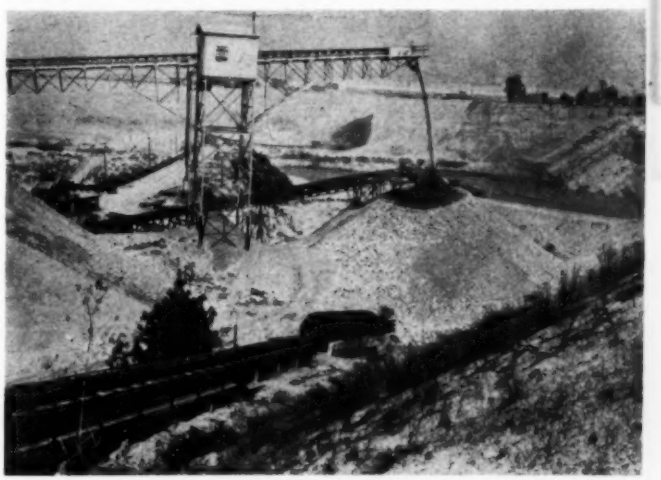
Steatite (talc) production in California was described in a paper by R. S. Lamar, technical director of Sierra Talc & Clay Company, Los Angeles. Most of this product, consumed by electrical-insulator manufacturers, has been obtained from a group of desert deposits in California. These deposits, it was explained, occur as lenticular to irregular bodies. Commercial specifications for steatite have become increasingly rigid of late due to the development of new types of ultra-high-frequency electronic equipment. These specifications involve close control of both particle-size distribution and

Ronald C. Griffin

particle shape of the ground material (done in Sierra's Los Angeles plants), as well as careful consideration of such factors as bulk specific gravity, shrinkage, absorption, and dielectric properties of the fired material.

Other papers of interest presented at the A.I.M.E. meeting included

(*Continued on page* 107)



The Irwindale plant of the Consolidated Rock Products Company, visited by delegates to the American Mining Congress. Shown here are the discharge end of the conveyor and the reclaiming belt. This plant has a capacity of 1,000 tons of washed and graded material per hour.

Report on Current Labor Developments

by S. HERBERT UNTERBERGER
S. Herbert Unterberger & Company
Industrial and Labor Economists
Washington, D. C.—Philadelphia, Pa.

Union Shop Elections Ended

EVER since the passage of the Taft-Hartley Act, an employer and a union were prevented from making an agreement requiring union membership as a condition for retaining employment until after a referendum was held in which a majority of the employees eligible to vote authorized the union to request such a "union shop". This provision was included at the insistance of many industry representatives who believed that union shops were essentially coercive arrangements which strengthened the hand of the union leadership, but did not have the support of the rank-and-file membership.

The history of the union shop elections, however, appeared to prove otherwise. In evaluating this history, it should be remembered that to authorize a union shop request required not only a majority of the employees voting but rather a majority of all the employees eligible to vote. Thus, failure to vote was equivalent to voting against such authorization.

Pursuant to this provision, thousands of union shop elections were held. In only a small minority of cases did the union fail to receive its authorization. For example, during the second quarter of 1951, the National Labor Relations Board reported that over 96 percent of such elections were won by the unions.

Having won such an election, a union is authorized only to demand a union shop. The employer is not required by law to accede to that demand. However, faced with the evidence that a majority of his employees desire such an arrangement, the demand is almost irresistible.

In view of this history, Senator Taft joined Senator Humphrey in pressing for an amendment to the law which would eliminate the union shop election requirement. This became law on October 22, 1951.

Henceforth, union and employers may agree to require union membership as a condition for retaining employment 30 days after the beginning of employment. The only exception is that employers may not make such agreements with unions whose officers have not filed the required non-Communist affidavits or with unions which have not filed the necessary information and reports with the Secreary of Labor.

The original Taft-Hartley Act had a companion provision whereby authorization to negotiate a union-shop provision could be rescinded. If 30 percent of the employees request the National Labor Relations Board to hold an election, it will do so. The union's authority will be rescinded unless a majority of the eligible employees vote to continue the authority. A union which has not complied with the filing procedures and which has a union shop agreement negotiated prior to the passage of the Taft-Hartley Act is, nevertheless, subject to the procedures leading to rescision of authority.

Non-Communist Affidavits

In its operation, the provision of the Taft-Hartley Act restricting its benefits to unions whose officials filed non-Communist affidavits, developed a very peculiar quirk. Many union officials were reluctant to file such affidavits. As a matter of fact, up to the present, John L. Lewis has not filed such an affidavit.

Initially the National Labor Relations Board decided that the top officials of the A.F. of L. and the C.I.O. did not need to file such affidavits except where they exercised the functions of local or international unions. As a result, many C.I.O. officials particularly did not file affidavits for a long time.

Recently, the Supreme Court reversed the National Labor Relations Board's previous ruling. It stated that the Taft-Hartley Act really required affidavits from the top A.F. of L. and C.I.O. officials. The result was that all actions taken by the NLRB in connection with C.I.O. unions, at least, were illegal. This upset thousands of union shops and cast a legal doubt on many other NLRB actions since 1947.

To overcome the difficulty, Congress recently amended the Taft-Hartley Act to eliminate the requirement for such affidavits from these top officials. The amendment was given retroactive effect, thereby legalizing the past actions.

Of special interest is the fact that these amendments mention the A.F. of L. and C.I.O. by name, thereby stating by inference, but unambiguously, that they were not putting either John L. Lewis or the Communist union leaders back in good grace.

Jurisdictional Disputes

Any employer who has been the innocent victim of a jurisdictional fight between rival unions will certainly recognize the C.I.O.'s recent action as a substantial forward step. The C.I.O. has established a procedure for settling such disputes without strikes.

If a dispute cannot be settled amicably in conferences between officers of the local unions involved, or in conferences between officers of the international unions involved, or by the new executive vice-president of the C.I.O., it will be placed before an impartial arbitrator whose ruling will be binding. The man favored for the position of impartial arbitrator is Dr. Frank Graham, ex-Senator from North Carolina and former President of the University of North Carolina.

The A.F. of L. also has a setup for avoiding jurisdictional disputes in the building trades. It was developed after the passage of the Taft-Hartley Act to avoid the possibility of having these arguments settled by the National Labor Relations Board. Because several powerful A.F. of L. unions have criticized its operation, it has not been an unqualified success.

The C.I.O. arrangement is supposed to rest on a voluntary contract between the unions and may therefore be more successful.

Of course, even this will not solve the problem completely. Disputes between A.F. of L. and C.I.O. unions for the right to represent particular groups of workers will continue.

Loring Quarries Power Line To Increase Voltage to 33,000

Near Bonner Springs, Kan., a 33,000-volt power line will be extended to the Loring Quarries and Natural Storage Company. A contract for the line has been let to the Kansas Power and Light Company, and work is scheduled to be finished before the end of the year.

Loring Quarries has a present load of 600 kv-a. and the Natural Storage Company will require 200 kv.-a. more and build up to an estimated 800 kv.-a.

At Harleyville, S. C., a two-day strike ended in an agreement between the management of the Carolina Giant Cement Company and union representatives on differences caused by the layoff given a union employee. The plant has a normal capacity of 1,900 bbl. per day. It was estimated that the 120 workers lost a total of $2,500 in wages.

Screening Plants Process Fill Material for Water Supply Dam

THE $30,000,000 Pepacton Reservoir dam now being constructed on the East Branch of the Delaware River at Downsville, N. Y., is said to be the fastest earthmoving job in the construction field to date. A total of 7,750,000 cubic yards of rock, gravel, and clay is being processed to construct the dam. Although it is essentially a dam construction project, the contractors were faced with the problems of preparing the large amounts of material to be used in the work. This amounted to scalping, screening, and sizing several million tons of material. To do this work two Hewitt-Robins earth processing plants were constructed and operated at the site.

The dam is designed principally as an impervious-core, earth-fill type of structure using a core or wall of water-impervious material, such as clay, to hold the water and to prevent seepage. The core material is compacted during construction, so that a solid mass of material is formed which is connected with similar material below and at the sides of the dam site. Protecting the core and forming the shore is a thick blanket of material that holds the core in place and prevents it from being injured by erosion or wave action. In the Pepacton dam the core is made from a stiff glacial till and the blanket from a river gravel.

The glacial till for the core is dug from a side hill about ⅝ of a mile from the dam site. It is extremely well compacted in its natural state and runs about 20 percent clay, with a moisture content up to 12 percent. The till is hauled by truck to a Hewitt-Robins processing plant adjacent to the dam site.

The trucks dump into a 150-cu. yd. hopper at the plant which feeds the material through a vibrating scalper screen with 12- by 15-in. openings. The oversize is carried by a short pan conveyor to a waiting truck which hauls it to the dam for embankment use. The through material from the scalping screen goes to an ascending belt conveyor 175 ft. long which discharges to two shaker screens for sizing before the material is trucked to the dam for use in the core construction. This clay plant has a capacity of 1,300 cu. yd. per hour.

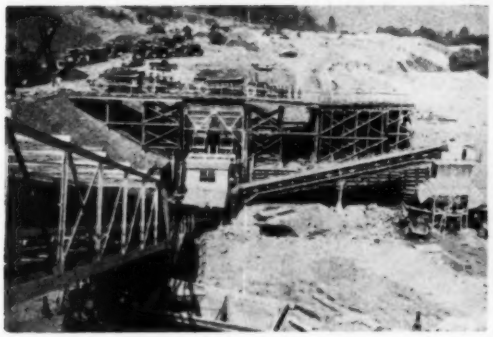
Gravel for the protective blanket of the dam is obtained from the side of the river and is bank run material. It is trucked to a Hewitt-Robins gravel processing plant for screening before being used in construction. At the plant the gravel is dumped into two bins discharging on two small pan feeders that control the flow of the gravel to two sets of vibrating screens with 7-in. square openings. These vibrating screens scalp out the large stones that may weigh up to three tons each.

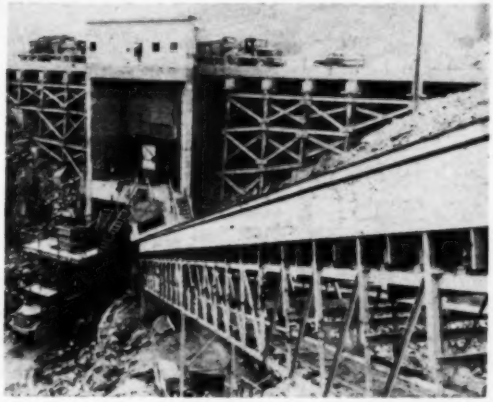
The scalped stones discharged as oversize are carried on a 48-in. metal pan conveyor a distance of 110 ft., to a hopper designed for truck loading. The stones are ultimately used in embankment construction on the dam. The gravel passing through the screens falls on a 60-in. belt conveyor 310 ft. long which travels 550 ft. per minute. This conveyor discharges into bins where the gravel is held until hauled to the dam. The gravel plant has a capacity of 2,600 cu. yd. per hour.

The two processing plants have established a record of preparing more than 50,000 cu. yd of material in a single 21-hour day.

The Pepacton Reservoir dam is

(*Continued on page* 107)





• Left: Metal pan conveyor removing stones screened from gravel. The conveyor is 48 in. wide and 110 ft. long. Stones may weigh up to 3 tons each.

• Below, left: Gravel plant, showing trucks dumping into bins, pan conveyors feeding screens, and the conveyors removing screened material. Oversize is discharged in 48-in. by 110-ft. pan conveyor at the right, and fines are removed by the belt conveyor at the left.

• Below: Clay processing plant, showing trucks above receiving hopper, scalping screen, and short pan conveyor for oversize discharging into truck. Conveyor at right carries screened clay to final screens.

The Testing of Concrete Aggregates

By HERBERT K. COOK

Chief, Concrete Research Div., Waterways Experiment Station, Jackson, Miss.

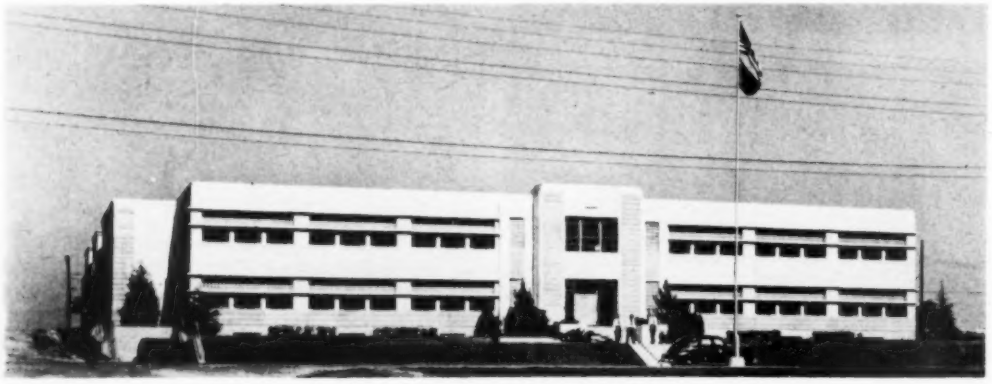
The following address, delivered at the National Sand and Gravel Association meeting in New Orleans last February, covers the function of a Waterways Experiment Station in developing information useful in evaluating aggregates. Mr. Cook also mentioned some aspects of the research work done by such laboratories which is pertinent to mineral aggregates.

THIS talk will, in general, cover a review of the procedures used by the Waterways Experiment Station in the testing of aggregates in connection with their evaluation for use on Corps of Engineers Civil Works projects. This review will be supplemented with a discussion of the developmental work being performed by the Concrete Research Division in connection with the improvement and standardization of existing test methods and the development of new methods and procedures for the improvement of concrete. It is not proposed to describe test procedures in detail, but rather simply to explain the nature of the tests to which an aggregate is subjected, the reasons for making such tests, and the need, as evidenced by research, for other tests which may more adequately provide desired information on mineral aggregates for use in concrete.

I would like to emphasize the point that there is a distinct difference between our function as a laboratory for testing aggregates in connection with their use on a project, and our function as a research laboratory. In this connection, I might explain that as a laboratory for testing aggregates for use on projects we are essentially limited to the Lower Mississippi Valley Division, which includes the New Orleans, Vicksburg, and Memphis Districts of the Corps of Engineers, for whom we function as the division concrete laboratory. In addition to our own laboratory there are six other division laboratories which function exactly the same as we do with respect to the evaluation of aggregates for projects. These laboratories are the Ohio River Division Laboratories in Mariemont, O.; the South Atlantic Division Laboratory in Marietta, Ga.; the Southwestern Division Laboratory in Dallas, Tex.; the Missouri River Division Laboratory in Omaha, Neb.; the South Pacific Division Laboratory in Sausalito, Calif.; and the North Pacific Division Laboratory in Troutdale, Ore.

Herbert K. Cook

We have published a *Handbook for Concrete and Cement*, which is bound in loose-leaf form for ease and economy in keeping up to date. It is used by all of the division laboratories, including ours, as a standard guide in the performance of all tests on materials used or being considered for use in projects. A large number of the tests are reprints purchased from the American Society for Testing Materials; these are unchanged from their official standards except for the overprinting of our own identification numbers. It might be of interest to mention here that the American Society for Testing Materials has advised us that reprints ordered from them for use in the *Handbook* was the largest single order that it has ever received for A.S.T.M. Standards. Other methods in the *Handbook* are reprints of federal specifications. Still others are based on A.S.T.M. standards but modified to meet better the needs of our particular testing problems. Finally some of our test methods have been developed in our own laboratory or



• Concrete Research Division, Waterways Experiment Station, office and laboratory building, Jackson, Miss.

in other division laboratories.

The test methods in the *Handbook* are periodically reviewed for possible improvement. Only last December representatives from all of the division laboratories met with us. The entire contents of the *Handbook* were reviewed for errors and improvements, and a general discussion was held on the need for modified or new testing procedures. The results of this conference will be reflected in improvements in a number of the test methods which will be revised by the publication of supplements to the *Handbook* in the next quarter.

If perhaps I have caused you to place the word "improvements" in quotation marks with a question mark at the end, I would like to add that no test method is revised, except for purely editorial reasons, and no new test method is placed in the *Handbook* until it has been circulated to all of the division laboratories for comment, until their comments have been received, and the finally modified version of the method has been approved by the Office of the Chief of Engineers.

We also are almost continually engaged in co-operative programs with the other laboratories for the purpose of improving the reproducibility of a procedure or determining whether modifications to a procedure have improved or reduced its value.

We fully realize the importance of our testing being accurately performed, and the tremendous effect that an inaccurate result, under certain circumstances, could have upon the government, the contractor, or the aggregate producer. Nevertheless, we are human beings, and errors can occur either in our performance of a test or in the development and editing of a test procedure. We would sincerely welcome your criticism of any of our test procedures with which you do not agree or your calling to our attention any changes or improvements which you might suggest in our test methods.

I believe I have spent too much time in this discussion of the *Handbook* but I did want to make it as clear as possible to you that we do have it and make every endeavor to follow it to the letter.

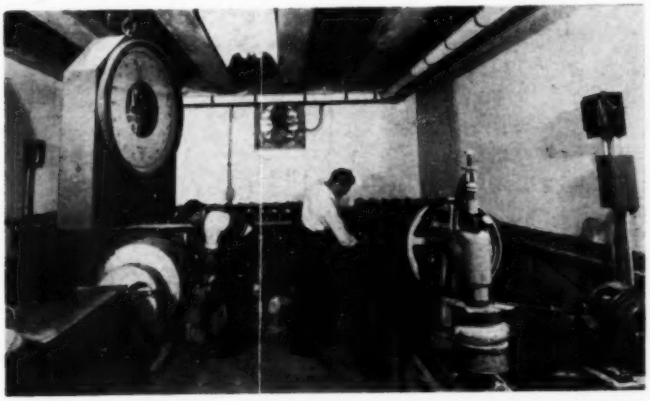
I have one more explanation to make about our use of the *Handbook*. We have included in it most of the test methods of which we know that may be useful to us in obtaining information on the properties or qualities of various materials. We do not, of course, always make every test on a material. A wide variety of tests can be made, but it is seldom that they will all be made on any given sample, since the appropriateness of a test depends both on the nature of the material tested and the nature and location of the structure in which it is being considered for use.

I will be more specific about just what tests we normally make on aggregates later in this discussion.

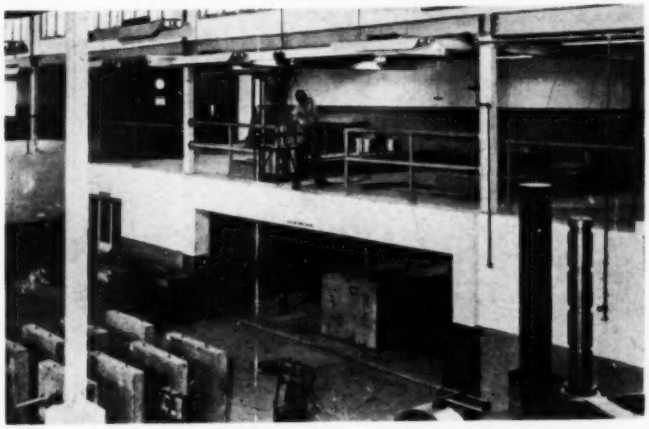
With this rather lengthy explanation of what we use for a guide, manual, or Bible in our testing work, I will now get down to a discussion of our functions as a division laboratory engaged in the testing of aggregates in connection with their evaluation for use on a Corps of Engineers project, reminding you again that the same function is performed in the same manner for other divisions by the other division laboratories.

The laboratory is a fact-finding organization, and the aggregate testing done by it is for the purpose of obtaining data on the relative quality of aggregate samples. The laboratory does not decide whether an aggregate sample represents satisfactory or unsatisfactory material, since for use on a given project that decision depends upon factors in addition to quality. For example, a source is not acceptable, regardless of the excellence of its quality, unless it is locally and economically situated with respect to the project, except that for a very important structure some modification of this statement might be made.

The laboratory develops data which are provided to the engineers in the district charged with constructing any given project for them to consider, together with all other data, in preparing recommendations as to what are to be considered acceptable sources and so designated



• A view of a small isolated room containing noise- and dust-making aggregate testing machines.



• Automatic equipment for conducting accelerated freezing and thawing tests.

in contract specifications. In this connection, as you probably already know, the Corps of Engineers specifications for aggregates do not ordinarily include quantitative limits for any feature other than grading and uniformity of grading.

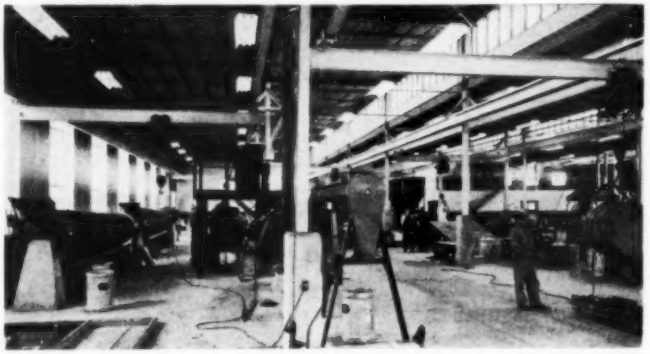
The specifications do provide that the results of all appropriate tests and the service record will be considered in evaluating aggregates with respect to quality. The function of the laboratory is to develop the test data, and, in certain instances, data on the service record as well.

All aggregates are, of course, tested for grading, although in the initial evaluation of an aggregate for acceptability as a source it is more important to determine that the various sizes are present in sufficient amounts for economical processing than that they initially meet a specified grading. It is, of course, mandatory that the aggregate, when processed for use on the project, fall within the specified grading and that the fineness modulus of the sand remain uniform. . . . The test method for determining grading is to put the material over the specified sieves and calculate the quantities retained on or passing the specified sieve sizes. It might be well to mention, however, that in the calculation of sand grading, confusion sometimes arises as to the inclusion of the amount of material passing the 200-mesh sieve. ASTM Method C 136-46 (our No.CRD-C103-48), *Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates*, states that the sieve analysis shall be calculated on the basis of the weight of the test sample including any material finer than the No. 200 sieve, and states that material finer than the No. 200-mesh sieve shall be determined in accordance with ASTM Method C 117-37 (our No. CRD-C 105-48), *Standard Method of Test for Amount of Material Finer than No. 200 Sieve in Aggregate*, or what is customarily referred to as the decantation test.

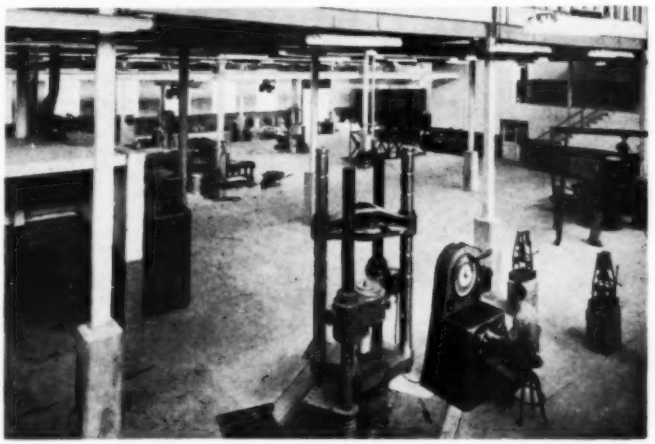
We, and I am sure most other laboratories also, put a No. 200 sieve in the nest of sieves when determining sieve analysis, for the purpose of improving the accuracy of the decantation test and as a check to see that all of the minus 200 material is accounted for in the event it was not all washed out in the decantation test. In our calculations we add the weight of the minus 200 material obtained in the decantation test to the weight of the sample for sieve analysis, which is clearly called for in the test method. We also add the weight of minus 200 material obtained in the decantation test to the weight of material passing the 100-mesh sieve, which is obvious but which is not so clearly stated in the test method. We also add the material which passes the 200-mesh sieve and is retained on the pan, in the sieve analysis, to the weight of material passing the 100-mesh sieve. To be sure that this matter, which is rather simple when you actually perform the calculations, but rather involved when you talk or read about it, is clearly understood, we are going to add a sample calculation to the test method in our *Handbook*.

We always determine specific gravity and absorption, not only because they are needed in connection with concrete mixture design calculations, but also because we believe them to be an indication of quality. We use the standard ASTM procedures, which are reproduced in our *Handbook*, for aggregates up to 3 in. in size.

For samples of 3- to 6-in. aggregate, our South Pacific Division Laboratory has suggested a method which is believed to be much more convenient and accurate for samples of this size and which we are adopting. This method employs the use of a large air meter, such as is commonly used for the determination of the air content of mass concrete, as a pycnometer. The air meter is approximately 2.8 cu. ft. in volume. The air meter is filled to the zero mark with water and weighed. The weighed saturated surface-dry sample of aggregate is placed in the meter and the meter is refilled with water to the zero point. Entrapped air is removed by tapping and rolling, and the removal of the air is checked by applying pressure to the air meter. The air meter with its contents is then weighed. Specific gravity is calculated by dividing the weight of the sample by the weight of the air meter full of water, plus the weight of the sample, minus the



• A general view in the concrete laboratory, showing aggregate processing equipment.



• A general view in the concrete laboratory, showing testing machines, specimen capping area, and cement storage bins.

weight of the air meter containing the sample and water. Absorption is determined by the usual calculation after determining the weight of the oven-dried sample.

We always test fine aggregate for the presence of organic impurities by the colorimetric method; and when such impurities are present, we investigate their harmfulness and, if indicated, their nature. We also test fine aggregate for its mortar-making and structural properties as determined by 2-in. cubes.

Coarse aggregate is always tested for abrasion loss in the Los Angeles machine, and for the quantities of soft, thin, or elongated particles.

Both fine aggregate and coarse aggregate in sizes smaller than 1 in. are tested for soundness in magnesium sulphate. We differ somewhat from the ASTM in our test procedure, principally in the fact that we use a solution of constant salt concentration rather than a saturated solution because it may readily be achieved with a minimum of temperature regulation and because it minimizes the possibility of the sample "caking" during the progress of the test. Also, we maintain the temperature of our solution at 80 deg. F. instead of 70 deg. F. We have in the past had some hot arguments with Mr. Walker and some of you gentlemen, but since we no longer have limits on this test, we haven't had any trouble on that particular score. While there is considerable disagreement on the value of the magnesium sulphate test as a criterion of the soundness of aggregate, and we don't particularly like it, there is apparently no fully acceptable substitute. Since it has been in use since 1828, it would be a difficult thing to abandon, even if such action were desirable.

There are several other tests which . . . we may make, depending upon the nature of the aggregate or the nature of the construction in which it is proposed for use.

If the aggregate is suspected of being reactive with the alkalis in cement, we almost invariably make the quick chemical test, mortar-bar tests, and a rather detailed petrographic examination. The quick chemical test indicates the amount of silica in the sample which is soluble in NaOH. Soluble silica is in general considered reactive. The test, unfortunately, does not distinguish between whether the soluble silica is present in the sample in localized areas or distributed throughout the aggregate. Neither does it tell the kind of mineral present.

The mortar-bar test provides information that assists in determining whether reactive materials are present in the proportions and in the state of distribution that might cause excessive expansion in concrete.

A complete petrographic examination will identify the kind of material, its distribution throughout the sample, and the amount in which it is present. When a reactive mineral is present the result to be expected in concrete is a deleterious chemical reaction.

The possibility that the expected reaction will not occur or that it may be forestalled—as a result of proper attention to the chemical composition of the cement, the use of an inhibitor, the fact that the deleterious constituent is present in an amount much greater than or much less than the "pessimum" amount, or the favorable location and exposure of the structure—should always be borne in mind by the laboratory worker when called upon to predict what will happen if a certain aggregate is used, and by the engineer who evaluates such predictions. However, in the present state of our knowledge these are mere possibilities; none can be counted on to give a safe guarantee of freedom from trouble if reactive materials are present in the aggregate.

We are interested in the behavior of aggregates when subjected to accelerated freezing and thawing in concrete and we normally make this test when investigating aggregates for use on other than only minor projects. I am sure that most of you are familiar with our test procedure, but to review it very briefly, we incorporate the combination of fine and coarse aggregate under test into a highly standardized concrete mixture from which we make 3½- by 4½- by 16-in. concrete beams, cure them for nine days, place them in individual containers surrounded with water, and subject them to freezing and thawing at the rate of one complete cycle every two hours. The center of the specimens reach a temperature of 0 deg. F. in the one-hour freezing cycle and +40 deg. F. in the one-hour thawing cycle. Deterioration is measured by periodic determinations of Dynamic E with the sonic apparatus.

We are interested in the thermal properties of aggregates and their effects on concrete in severe exposure conditions. For projects exposed to such conditions, we determine the thermal coefficient of expansion of the coarse aggregate and of the mortar.

Since the major portion of the samples which we receive at our own laboratory come from the Gulf Coastal Plain, most of the gravel is chert. We therefore very frequently determine the percentage of porous or "unsound" chert in the gravel. We do this by separating the gravel on the basis of specific gravity in a liquid having a specific gravity of 2.4. The porous or "unsound" chert floats and the heavier materials sink.

One of the more important tests which we make is the petrographic examination. Very early in the process of selecting suitable aggregate sources, we can save a great deal of tedious and expensive testing by running what might be called a preliminary petrographic analysis. Such examination can eliminate from further consideration those sources which consist of extremely weathered, soft, porous, and mechanically weak aggregates and those containing deleteriously reactive constituents.

A more detailed examination furnishes data on the presence of individual rock types and the minerals present in the material. It tells us many things about the physical properties of the aggregates and in many

• Chemistry laboratory, Concrete Research Division, Waterways Experiment Station.

cases what might be expected of them in service.

This covers in a general way the tests which we normally make in the evaluation of aggregates for use in construction. We fully realize that the methods now available do not provide a perfect or uniformly conclusive basis for the selection of acceptable aggregates . . . We do feel, however, that progress has been made over some of the procedures that have been used in the past.

We are working constantly to improve existing methods or to discover new methods of testing that will enable us to evaluate more clearly the relative quality of aggregates, to improve economically the quality of the less satisfactory ones, or otherwise to permit their use. This brings us to the other function of the Experiment Station as a research laboratory for the Corps of Engineers . . . Many people, as soon as the word "research" is mentioned, think of a group of people in white coats peering down microscopes or heating test tubes, who about every other day make some miraculous discovery that lets everybody live happily ever after. We don't have any white coats; our laborers occasionally wear white canvas aprons, although they don't stay white very long; and I can't think of a single miraculous discovery we have ever made. Nevertheless, I feel that we have paid our own way, and that the money spent to keep us going has been a good investment.

One of the principal reasons for our existence is to find out ways of saving money for the government. One of the research programs which we have under way right now is to find out whether we can use certain pozzolanic materials not only to save cement but also to inhibit alkali-aggregate reaction to the point where we can safely use locally available reactive aggregates. If this work is successful, it will not only save the government considerable money but will also enable the aggregate producer to make some money on materials that he might not otherwise be able to furnish.

Another thing that we are doing is to attempt to develop a satisfactory non-freezing weathering test which will enable us better to evaluate aggregates proposed for use in climates where freeezing and thawing does not occur. We are presently experimenting with a machine which will subject concrete specimens to alternate cycles of heating and drying and cooling and wetting. Two such machines are in operation at the present time, one at our own laboratory and one at the Southwestern Division Laboratory at Dallas. We are now in the middle of a co-operative program to determine the reproducibility of test results between the two machines on identical specimens. This test is not being used in the evaluation of aggregates for projects, and a lot of work still remains to be done before such use can be made of it; but if it does prove to be successful, it will be a big step forward and very possibly it might permit us to use materials that we are reluctant to use with our present knowledge.

The station has a continuing project under way for the collection of all data obtained on aggregates by all of our division laboratories. Data on new sources or new data on old sources are sent to us periodically by each of the division laboratories. This information is tabulated on a standard form, and the source is located on standard Geological Survey maps. As the data accumulates, we will reproduce it and provide copies to the various districts which might possibly have an interest in the aggregate sources in a given area. Only last month we had a request from a district for available test data on aggregate sources within a radius of 100 miles of several locations, all of which were at least 400 miles from the proposed job and some as much as 800 miles. Because of the fact that we have this aggregate data compilation project under way, we were able to provide them with information on several sources from each location. Before you begin to wonder if the Corps of Engineers is going to start shipping aggregate 800 miles, I hasten to add that they were interested in obtaining precast concrete architectural units and were requesting data on possible sources of aggregate in the vicinities of the companies which were in the business of making these precast units.

We have just completed a report on the results of a series of co-operative tests to improve the procedure for running the quick chemical test for determining whether an aggregate is reactive or not. This program was participated in by all of our division laboratories and by the Bureau of Reclamation laboratory, which originally developed the test. The results indicate that the proposed changes will very considerably improve the reproducibility of the test between laboratories. With a rather small amount of additional checking, which is now under way, the reproducibility will undoubtedly be improved even further.

We are in the middle of a co-operative program with the other division laboratories to improve the reproducibility of the mortar-bar test for alkali-aggregate reaction.

We are checking on the operation of the freezing-and-thawing machines in each of the division laboratories and further standardizing the test procedure to improve the reproducibility of this test between laboratories. We recently completed a cooperative test program with the laboratory of National Sand and Gravel Association in which concrete specimens with several combinations of aggregates were made at its laboratory. A portion of the specimens were shipped to us for testing in our equipment, and a portion of them were retained by your laboratory for testing in your equipment. It is probable that additional tests of this nature will be made in the near future.

A report on studies we have made of the effect of sand grading on lean mass concrete has been issued, and we are developing more data on this important question.

• Another view of the chemistry laboratory.

We have, as you all probably know, two natural exposure stations, one at Treat Island, Me., where the specimens are subjected to severe exposure to alternate freezing and thawing during the winter months, and one at St. Augustine, Fla., where the specimens are exposed to sea water under non-freezing conditions. The specimens are installed at half-tide at both stations and are alternately immersed in sea water and exposed to air each tide. We have concrete specimens representing many aggregate combinations at these stations, to study the effect of this natural weathering on the various materials in concrete and to develop any correlation that may exist between this exposure and our accelerated weathering tests . . .

There are numerous other smaller investigations in progress, and I have not mentioned any of our programs which pertain more to cement or concrete than to aggregates but time would not permit me to discuss them now.

In closing I would like to emphasize the fact that our major efforts are along the line of finding ways to use aggregates and other materials which at present appear to be unsafe or undesirable to use. I repeat that if we are successful in these efforts, it will save the government great sums of money and will also reflect to the advantage of aggregate producers.

A.I.M.E.-A.M.C. Meetings

(*From page* 99)

one by T. B. Counselman (The Dorr Company) discussing applications of Fluo-Solids in minerals processing, including the calcination of limestone and other nonmetallics. Another, prepared by J. V. Wiseman and L. A. Blackmun of West End Chemical Company described the recovery of alkaline salts from Searles Lake in California. End products marketed by the company include several grades of soda ash and borax.

Screening Plants Speed Work

(*From page* 101)

part of the water supply system for New York City and is designed to create a lake 18.5 miles long that will hold 147,000,000,000 gallons of water. The reservoir and the necessary connecting works are expected to supply 300,000,000 gallons daily to the metropolitan area.

Construction of the reservoir was started in 1947 and is scheduled for completion in 1954. It is located on highway Route 30 and is owned by the City of New York Board of Water Supply. The entire project, it is estimated, will cost about $120,000,000. The lake formed will submerge four villages, Pepacton, Shavertown, Union Grove, and Arena. The 943 residents of these communities have been moved to new locations in the region.

The North Arkansas Lime Products Company of Harrison, Ark., has installed a new $60,000 crusher near Bellefonte for the production of aglime and chats. The firm was organized recently by Sterlin Hurley, Aubrey Hickenbottom, and Ralph Estes.

New Federal Safety Magazine Published by U.S. Labor Dept.

A monthly round-up of news and features of techniques and developments in state, federal, and private organizations in the field of industrial safety is the objective of *Safety Standards*, the new federal safety magazine. It will be published by the Bureau of Labor Standards, U.S. Department of Labor.

As a successor publication to the *Safety Bulletin* and the *Federal Safety News*, formerly published by the Bureau of Employee's Compensation and the Federal Interdepartmental Safety Council, respectively, the new periodical will continue their coverage and in addition report on the President's Conference on Industrial Safety, regular shfety activities of the states, and public and private programs directed toward reducing accidents in defense production establishments.

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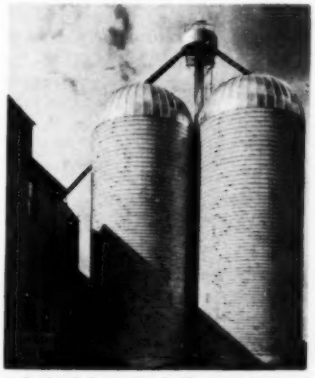
2 Big Concrete Silos Store 1100 Tons of Vermiculite

A new use for the familiar concrete stave silo of American farms can be seen at the Minneapolis plant of Western Mineral Products Co., where two giant versions of these silos have just been built for storing vermiculite ore. The Milwaukee plant of Western Mineral has a similar installation. Although such silos have been used industrially to store cement, roofing granules, and similar materials, they are relatively new to the vermiculite industry. The two 55-ft. silos are larger than those on farms and they have stronger reinforcing since each holds 550 tons of ore.



• Each of these silos holds 11 carloads of vermiculite.

Ore shipped by rail from the Libby, Mont., mine is dumped on a belt conveyor into a hopper and picked up by a bucket elevator which carries it to the top of the silo. The loading spout can be controlled from below to switch from the home insulation grade silo to the plaster aggregate grade silo. When ore is wanted for processing, it is picked up from the bottom of the silo, again by bucket, and taken up to the spout selector which directs the ore through screw conveyors into the plant.

DMA Assists in Exploring Wisconsin Asbestos Find

A $5,000 contract to explore for reserves of asbestos—a strategic and critical mineral with important insulating uses—in Marinette County, Wis., has been entered into between the United States Government and industry, according to Paul Zinner, Region V Regional Director of the U.S. Bureau of Mines.

Under the terms of the Defense Minerals Administration contract, the Government will contribute 90 percent or $4,500 to the cost of the project, and the Star Mining Company of Madison, Wis., the operator, the remaining amount. Stripping of the overburden by a bulldozer around a small outcrop containing chrysotile—one of the most abundant and useful of the asbestos minerals—is now in progress about seven miles west of Nathan, Mich. Maximum depth of excavation will be 20 feet in an area covering 80 sq. ft.

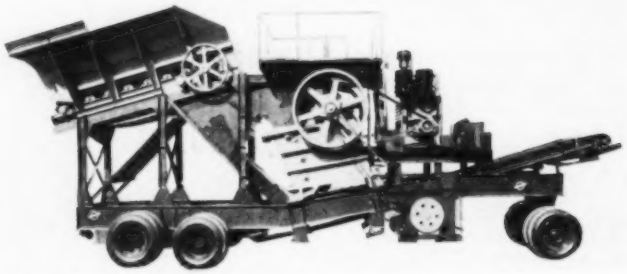
Gypsum, Gypsum Products Set New Production Records

New second-quarter records were set in the production of crude gypsum and in most of the categories of gypsum products. Domestic mine output of 2,305,307 short tons was 20 percent higher than in the same period last year. Although imports of crude ore dropped slightly, the total apparent supply of crude gypsum reached a new high at 2,969,716 short tons.

Records were set in every major classification of gypsum and gypsum products. Calcined gypsum production was 12 percent higher than in the second quarter of 1950, and the output of cement retarder and base-coat plaster were 9 and 1 percent higher, respectively, than in the preceding year.

Production of all gypsum board was 17 percent higher than in the same period in 1950. Worthy of special comment are the marked gains shown by wallboard, agricultural gypsum, and miscellaneous building plasters.

new machinery and supplies



● Portable Jaw Crusher

A new line of portable primary jaw crushers has been announced by the Smith Engineering Works, Milwaukee, Wis.

The new crusher has a receiving hopper with a special duty apron feeder, a heavy-duty, roller-bearing jaw crusher, and a delivery conveyor. A grizzly is optional between feeder and crusher. The plant can be obtained either with a towing pole and front axle or with a king pin for tractor hauling. The unit is suitable for quarry or gravel pit operation, and is being manufactured in three sizes.

● Jumbo Drill Rig

A drill jumbo for use in mines for drilling, powder loading, scaling, roof bolting, and timbering features two hydraulic jib arms with self-leveling operator's platforms, a mast platform that is adjustable at any height, and a folding mast that can pass through a 15-ft. opening.

The tracks are independently driven for maneuverability, and the entire machine may be easily disassembled for entrance through mine shafts. Power is supplied by electric motors. This jumbo is one of the line manufactured by Rogers Iron Works, Joplin, Mo.

● Steam Cleaner

A steam cleaning machine, the "Power Master Unit", is announced by Kelite Products, Box 2917 Terminal Annex, Las Angeles 54, Calif.

Designed especially for heavy-duty cleaning in industrial maintenance, construction, automotive, marine, and railroad fields, the machine features two high-pressure steam guns, each delivering 150 gal. per hour. An additional gun delivers hot or cold water with a pressure of 500 lb. p.s.i. This power blast gun has a capacity of 1,000 gal. per hour and is used for blasting away accumulations of mud, grease, etc.

● Hard-Facing Alloy

An oxy-acetylene rod with good abrasion, impact, and corrosion resistance has been developed by the Wall Colmonoy Corporation, 19345 John R Street, Detroit 3, Mich.

The rod is composed of an alloy containing chromium, molybdenum, manganese, silicon, carbon, and iron. It is recommended for use on conveyor parts, screw conveyors, chutes, bucket lips, grinding mill plates, grinder rings, and similar places where hard facing is used to prolong service life of equipment. The rod is available in $\frac{3}{32}$-, 4/16-, and $\frac{1}{8}$-in. diameters and is marketed under the trade name "Wallex".

● Steel Belting Splice

Steel cable conveyor belting can be spliced in the shop or in the field by a new method perfected by the B. F. Goodrich Company, Akron, Ohio.

Small tubular connectors are placed over the ends of the cables in the conveyor belting. These connectors are crimped so that the cable is locked to them. The fabric body and the rubber is rebuilt around the splice and vulcanized.

In making the splice the cable ends are cut in a staggered pattern and tensioned before the connectors are finally crimped. This results in a straight splice that is claimed to be as strong as any place in the belt. The only special tools needed are a scraper for removing the rubber from the cables and the crimper for the connectors.

B.F.Goodrich

This tire has a built-in rock-absorber

LAMBERT BROS., INC., of Knoxville, Tennessee, are engaged in quarrying operations in Tennessee, North Carolina, Georgia and Virginia. Trucks used in their operation travel in and out of the quarries, carrying heavy loads of dynamited limestone to the crusher. Pictured is one of the dump trucks at the Shepherd, Tennessee branch of the company (above), equipped with B.F.Goodrich Universal tires. Through the use of these tires the company says that better traction is obtained and that they hold as well in one direction as in the other. And the special construction provides unusual bruise resistance when travelling over rocks.

BFG Universals are ideal for toughest off-the-road service. They turn in top performance records even where rock, shale, stumps, ruts and other hazards are tire threats. Wedge-shaped tread resists cuts. Sidewalls are reinforced with tough, extra-thick rubber. The backbone, or body, of the tire is protected by the patented *nylon shock shield*. It acts as a shock-absorber—or "rock-absorber". And *here's* where you get extra bruise resistance. Strong, live, elastic nylon cords are built in between the tread rubber and the cord body. Under impacts of any kind, these cords work together, absorbing and distributing the shocks.

This feature is found in all BFG tires of 8 or more plies at *no extra cost*. *Double* nylon shock shield is used in Universals of sizes 11.00 and larger.

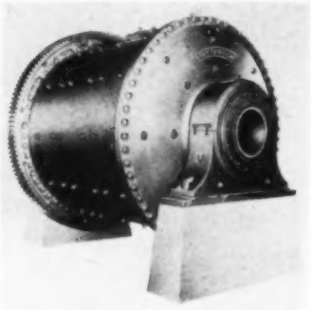
B. F. Goodrich tires are built for *every* type of on or off-the-road operation. No matter what your specifications may be, you'll find that your local B. F. Goodrich dealer can show you the way to longer and better tire service. *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

● Continuous Ball Mill

A heavy-duty continuous ball or tube mill has been announced by the Patterson Foundry and Machine Company, East Liverpool, Ohio.

The mill is adapted to coarse or fine grinding, wet or dry, in open or closed circuit. The mill may be used to produce a finished product or to operate with suitable classifying equipment. Hollow



trunnions provide for continuous feed and discharge of materials.

Among the features are cast steel heads that are slightly conical and have turned and polished trunnions. The heads bolt to a flange ring on the shell and are held in alignment by matching recess and shoulder. The shell is welded steel drilled for installation of a replaceable lining. The ring gear is split and reversible for long life; it has full-depth 20-deg. pressure angle involute teeth. The trunnion bearings may be of babbitt, bronze sleeves or fabric plastic sleeves. An oil circulating system lubricates the bearings prior to starting of the mill. Water lubrication and cooling are provided for the plastic type of bearing.

Sizes of the mills range from 2 by 2 ft. to 10 by 24 ft.

● Hardened Gears

An exclusive hardening process that produces a tough wear-resistant surface on gears, pinions, sheave wheels, sprockets, and shafts is used to prolong the life of the products made by the Tool Steel Gear and Pinion Company, Cincinnati 16, O.

The Tool Steel process gives a surface that is between 650 to 740 Brinnell, with cores that are treated for refinement, ductility, and toughness. This hardening process is claimed to prolong the life of sprockets about five times over untreated steel, and up to ten times as long on gears. A line of standard items is carried in stock, and special ones can be made to order.

● Triple Roll Crusher

A triple roll crusher of 54-in. by 24-in. size has been announced by the Pioneer Engineering Works, Minneapolis 13, Minn.

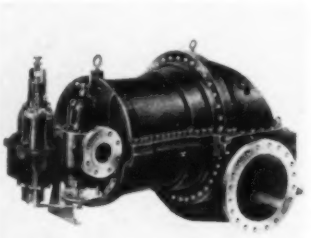
The new crusher is designed to operate behind a large jaw crusher and may be used in either stationary or portable operations. By combining two stages of reduction in one crusher, larger feed

can be handled and the plant output stepped up. Nominal production is about 35 tons per hour of minus ½-in. to 500 tons per hour of minus 4-in. material.

● Multi-Stage Steam Turbine

A line of multi-stage steam turbines has been announced by the Steam Turbine Department of General Electric, Schenectady 5, N.Y.

The new turbines are available in two to ten stages and from 200- to



5,000-hp. Four models are being made which differ mainly in the amount of speed reduction and regulation desired. One of the models can be used for process steam as well.

● Air Compressor

The new Model 365 air compressor made by the Jaeger Machine Company, Columbus, O., is powered by a 165-hp. Model HRBI-600 diesel engine built by the Cummins Engine Company, Columbus, Ind.

The compressor supplies 365 cu. ft. of air per minute at 100 lb. pressure. Operating speed of the engine and compressor is 1,240 r.p.m. The compressor and engine are mounted on a welded heavy-duty wagon that has an "autosteer" front axle which permits hauling at speeds up to 35 m.p.h. over rough roads.

The engine is a six-cylinder full diesel with a displacement of 743 cu. in. and a compression ratio of 15.5 to 1. Maximum rated speed is 1,800 r.p.m.

● Mill Liner Bolt Sealer

A new sealer for liner bolts on wet grinding ball, rod, and pebble mills has been announced by the Allis-Chalmers Manufacturing Company, Milwaukee 1, Wis.

The new sealer features a molded rubber ring that is compressed when the bolt head is tightened, so that it conforms to the curvature of the shell and also fills the space between the bolt threads. The rubber also absorbs some of the impact of the grinding bodies, and prevents overtightening of liner bolts and subsequent failure.

The new sealer is available in 1¼- and 1½-in. sizes for use on shell liners, end liners, diaphragms, and division heads.

● 200 Amp. Welder

Designed for general maintenance and production welding, the Airco Model MCM 200 is a transformer type that is built for shops and industrial plants.

The MCM has a 50 percent duty cycle, NEMA rating. It is available as a 220-volt or a 220/440/550-volt unit, and may be had with or without power factor correction.

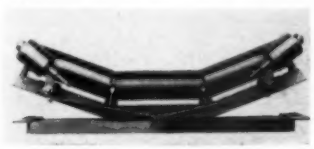
Two open-circuit voltages are provided—80 volts on the low range and 55 volts on the high. This combines easy arc starting with a lower kv.-a. demand load and primary ampere current.

The welder is insulated throughout and has an easy reading current indicator for quick adjustment of the welding current. There are no moving parts requiring maintenance. Air Reduction, 60 East 42nd Street, New York 17, N.Y. is the manufacturer.

● Belt Training Carrier

A belt training carrier that is said to cause only negligible wear on the belt edge is among the line of conveyor carriers built by the Stephens-Adamson Manufacturing Company, Aurora, Ill.

The training carrier uses training rollers at the outer side of the carrier that respond to any shift of the belt and cause the carrier to tilt in an angular position with respect to the belt travel. This returns the belt to center and the carrier returns to normal. It is claimed that this carrier needs to be installed only at intervals of 50 to 100 feet for most applications.

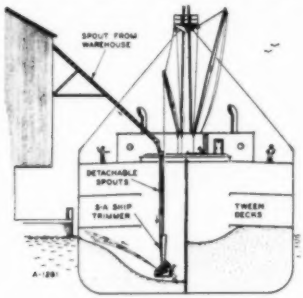


● Ship Trimmer

A ship trimmer designed to speed up loading of bulk cargoes of cement, bauxite, and similar materials has been placed on the market by the Stephens-Adamson Manufacturing Company, Aurora, Ill.

The trimmer consists of a high-speed belt held concave by idler discs on the outer edge. The material is fed on the belt by a chute and is picked up by the moving belt and given a speed of 2,700 f.p.m. This throws the material a distance of about 50 ft. beyond the trimmer. A gear mechanism permits the operator to tilt the stream of material vertically to obtain correct loading.

The trimmer can be suspended by cables and fed by adjustable spouts or it can be mounted on a boom. It can



be swiveled through 360 degrees. On cable-mounted types this is done by two operators in the hold, while the boom types are controlled by the boom operator. Capacities range up to 1,500 t.p.h.

● Welder's Goggle

A new welder's goggle that features removable and adjustable binder type leather side shields has been announced by the American Optical Company, Southbridge, Mass.

The new goggle can be adjusted for perfect fit and maximum comfort by loosening the end piece screws. By removing the screws the side shields can be taken off for cleaning, sterilizing or replacing. The shields are made of soft leather for greater comfort and increased protection. The bridge and reinforcing bar are also covered with leather. This style is called series 3018A.

● Hard Surfacing Rods

A line of hard-surfacing welding rods to protect surfaces from severe wear is being marketed under the name "Seaco" by the Stulz-Sickles Company, 134 LaFayette Street, Newark 5, N. J.

The use of Seaco electrodes is recommended on new manganese parts to protect them until work hardening has taken place, to protect rebuilt manganese parts in the same way, and to protect mild steel against abrasion. The rods are designed for reverse polarity d.c. or a.c. Suggested applications include buckets and parts, dozer blades, chutes, crusher parts, dredge pumps, hammermills, grousers, and parts receiving similar usage.

personal mention

Promotion of DR. J. O. HENDRICKS to the newly-created post of associate director of the Minnesota Mining & Manufacturing Company's central research laboratories has been announced by Dr. H. N. Stephens, central research director. At the same time DR. MATTHEW W. MILLER and DR. H. M. SCHOLBERG were named assistant directors.

Dr. Hendricks joined 3M in 1936 after receiving his doctorate at the University of Illinois. He became head of the firm's organic chemistry section in 1942 and a year later took charge of the colloid section. He has been assistant director of the central research laboratories since 1947.

Dr. Miller also received his doctorate at Illinois. In 1947 he succeeded Dr. Hendricks as head of the organic section at 3M after serving in the U. S. Army and in a scientific post in Germany.

Dr. Scholberg joined 3M in 1944 and has headed the electro-chemical section since 1948. In his new position he will head the inorganic section and will develop a new physical chemistry section.

VICTOR F. HUMMEL, salesman for Huron Portland Cement in the Buffalo area for more than 20 years, has been appointed district sales manager for the state of New York succeeding E. V. Allen.

JACK D. MOORE has been named plant superintendent at Kaiser Aluminum & Chemical Corporation's Natividad, Calif., dolomite plant, replacing WALT ADAMS, who has been transferred to the company's Baton Rouge alumina plant as works manager.

Mr. Moore joined the Kaiser organization in 1942 at the Permanente, Calif., magnesium plant, later was senior engineer of chemical plants at Natividad and Moss Landing, Calif., and recently became an assistant to J. F. Knight, works manager of chemical operations in California. He will be responsible to D. M. "Mac" Kerr, general superintendent of operation in the Salinas area.

Mr. Adams, plant superintendent at Natividad for the last three years, has been with the company for ten years.

W. C. FURLONG, service engineer for the Hawkeye-Marquette Cement Company in the Des Moines, Iowa, area for the last five years, has been transferred to the St. Louis sales office of the parent organization, the Marquette Cement Manufacturing Company. From St. Louis he will carry on his duties as service Engineer for Marquette in the Missouri-southern Illinois area served by the company's St. Louis office.

After 30 years of sales activities with the Alpha Portland Cement Company, 29 as Chicago district sales manager, C. R. SMITH has retired from his duties.

C. K. MACTAGGART, who has been assistant to Mr. Smith, will assume the duties of Chicago district sales manager. Mr. MacTaggart became associated with Alpha in 1924.

MELVIN H. BAKER, president of the National Gypsum Company, has been appointed to a new Buffalo Redevelopment Committee, which aims to push redevelopment of the city's blighted areas.

JOHN C. TENOLD, chief engineer of Columbia Gypsum Products, Inc., recently addressed members of the American Society for Metals at Spokane, Wash., describing processes leading to the manufacture of gypsum plaster, blocks, and plaster board.

Two members of the Stonemo Sales Division of the Stone Mountain Grit Company, Lithonia, Ga., have been named to supervisory and official positions.

CHARLES L. DAVIDSON, JR. has been made general sales manager and GAINES BREWSTER was named a divisional sales manager. Mr. Davidson has been in the firm's sales department and has supervised the advertising program for the last three years. He will continue to serve as advertising manager. Mr. Brewster, a former newspaperman, has been associated with the company in the printing-advertising department. His new duties include supervision of sales in a portion of the South and the Midwest.

JOHN H. REICHENBACH has been namer chief chemist for the Coplay Cement Manufacturing Company. He succeeds WILLIAM J. JOHNSTON, who died on October 16.

E. R. STEVENS, vice-president of the Baldwin-Hill Company, Trenton, N.J., has been elected president of the National Mineral Wool Association, a group of leading manufacturers of insulation with headquarters in New York. Before joining Baldwin-Hill in 1947 as a stockholder, director, and vice-president, he

was associated with the Johns-Manville Corporation and the Eagle Picher Company.

Newly elected members of the board of directors of American Potash and Chemical Corporation were announced as follows, in conjunction with the report on the purchase by the Mathieson Chemical Company of American's A and B stock:

JOHN C. LEPPART, executive vice-president; SINCLAIR RICHARDSON, R. G. STONE, and GARDINER SYMONDS, Mathieson directors, named to the board of American Potash; W. P. SCOTT, attorney and counsel to American Potash, elected a director to replace the late A. E. MARSHALL.

WALTER C. LAUT, controller of the North American Cement Corporation, New York, N.Y., has been elected to membership in the Controllers Institute.

MRS. WINIFRED L. HAAG was recently elected president of the United Feldspar and Minerals Corporation, according to an announcement issued by the company. Mrs. Haag, widow of Major Francis E. Haag, who founded the corporation, is the first woman president of a company in the feldspar field.

R. I. KEITHLEY has accepted a managerial position with the National Gypsum Company, Buffalo, N. Y.

Revised Vermiculite Booklet Contains Important Data

Vermiculite Plaster Fireproofing has been enlarged and re-issued by the Vermiculite Institute, 208 South La Salle St., Chicago 4. It is now an 18-page illustrated booklet, presenting an up-to-the-minute summary of all fire tests on construction assemblies protected by vermiculite plaster, with new drawings of typical fireproofing details.

Three important points were brought out by recent fire tests of vermiculite plaster protection, namely:

1. That ceilings attached or furred to the bottom of primary members obtain the same fire rating as suspended ceilings.

2. That ceilings, whether attached or furred, or suspended, may be used to protect primary as well as secondary members. In other words, individual fireproofing of primary members is not necessary.

3. That ceiling openings within the area limits indicated do not affect the fire resistance value obtained by a similar ceiling with no openings.

These points are explained in detail in the booklet.

New Jersey's Potential Feldspar Resources, Mineral Technology and Economic Evaluation is the title of a publication issued by the Bureau of Mineral Research of Rutgers University, New Brunswick, N. J. Copies may be obtained by applying to the Bureau.

obituaries

EDMOND URQUHART RAGLAND, secretary-treasurer of the Superior Stone Company, Raleigh, N. C., died unexpectedly on October 7 at his home in that city. He had suffered a heart attack.

Mr. Ragland organized the Superior Stone Company in 1926 and served as secretary-treasurer of the firm from that time until his death. He was 60 years old.

MONTAGUE H. GRAHAM, for many years vice-president of the Pacific Rock & Gravel Company, Monrovia, Calif., died November 6 at his home in Monrovia. Born in Toronto, Canada, he had resided in southern California for 46 years and had been prominently identified with the sand-and-gravel industry since 1912.

EDWARD J. DYKE, well-known as a sales representative of The Celotex Corporation in the Chicago area for more than 25 years, passed away in St. Paul, Minn., on October 21.

Mr. Dyke came to Chicago after World War I to work for a local insulating firm. In 1924 he began selling for Celotex. About six months prior to his death he had been transferred to the Celotex Minneapolis branch.

GEORGE GRICE SHERWOOD, vice-president, secretary, and treasurer of the Henry J. Kaiser Company, the Permanente Cement Company, and Kaiser Gypsum, died of a heart attack recently in Oakland, Calif. He was 60 years old.

Mr. Sherwood was one of Henry J. Kaiser's first employees, and was associated with the Kaiser interests for 32 years. He first served as a bookkeeper in Seattle, Wash., and through the years advanced to the post of an executive.

One of California's pioneers in the lime and portland-cement industries, STANLEY W. HOUGHTON, died of a heart attack at his Long Beach, Calif., home on November 6. He was 79 years old.

His first connection with the limestone processing industries was made before the turn of the century with the old Union Lime Company near San Bernardino, where he eventually became superintendent. Later he became manager of the Golden State Portland Cement Company at Oro Grande. He served also as justice of peace of the desert community and is credited with ridding the town of "badmen", culminating with the capture, in 1908, of the notorious outlaw Heironymous Hartman.

OSMOND M. BARRON, president of the Utah Gilsonite Company of St. Louis, Mo., died recently of a heart attack in a St. Louis hospital. He was 58 years old.

WILLIAM RICHARD BURGOYNE, 38, production manager and assistant to the vice-president of the United States Gypsum Company, Chicago, died on October 19. Mr. Burgoyne graduated from the Wisconsin Mining School and the Missouri School of Mines, and was a member of the American Mining and Metallurgical Society.

LOUIS H. BANGERT, 61, president and owner of the St. Charles Quarry Company, St. Charles, Mo., died on October 19 of a heart ailment. Mr. Bangert was one of the founders of the Bangert Brothers Construction Company and the St. Louis County Transit Company.

WILLIAM J. LANCE, 65, president of Lance Construction Supplies, Incorporated and Lance Gypsum and Lime Products, Chicago, died on October 10 of a heart attack at his office.

MARSHALL WHITE, 47, salesman for the Keystone Portland Cement Company of Philadelphia, Pa., died on October 18 at his home in Collingswood, N. J.

M. V. AHLVIN, 59, an executive of the Lincoln Crushed Stone Company, Joliet, Ill., died on October 19 after a brief illness. Mr. Ahlvin was supervising work on a construction project at Chanute Air Force base in Rantoul, Ill., at the time he was stricken.

JOHN EDWARD MONK, 72, sales manager of the Builders Sand Company, Wichita, Kan., died on October 31 from a heart attack suffered while he was at work.

CARLETON T. WEST, 52, vice-president of the Monolith Portland Cement Company, Los Angeles, Calif., died on November 10.

An accident at the pit of John Jones & Sons, Inc., near Indianapolis, Ind., recently cost the life of an employee, REGINALD PHILLIPS. Apparently upset over the loss of a considerable sum of money in a robbery only a few hours earlier, he backed his truck too near the edge of the bank where he was to dump a load of sand. The bank gave way and before the driver could jump clear, the truck flipped over and sank in 45 ft. of water.

More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. "Tool Steel" Process Gears, Pinions, Sheave Wheels, Pins, Sprockets, Shafts. Bulletin No. 948. A six-page folder that illustrates some of the hardened steel products that are produced by the company. Several types of sprockets, sheave wheels, bevel and plain gears, pinions, shafts, pins and rollers are shown. Illustrations of the treated parts and the text bring out the results of the hardening process and the lengthened life that is claimed to result. Tool Steel Gear and Pinion Company.

2. Tiaco Timang. Bulletin No. 451. This six-page folder describes the properties of the manganese-nickel steel products that are marketed under the Timang tradename. Welding rod, steel point bars, grouser bars, and repointers are covered. Procedures for using these products are given and a full size chart of dipper teeth repointer bars is included. Specifications for the products are also given to simplify ordering. Taylor-Wharton Iron and Steel Company.

3. Safety Clothing for Industry. A twenty-page bulletin that covers the field of industrial safety clothing. Applications are shown and the various objectives described. Much of the bulletin is a catalog devoted to illustrating the line of gloves of all types—steel reinforced, leather, asbestos, mittens, hand guards, etc., and to showing aprons, leggings, spats, leg guards, coats and other apparel for use in firefighting, welding, and other hazardous jobs. Industrial Gloves Company.

4. Crushing In the Aluminum Industry. This twenty-page booklet uses the story of aluminum to tell of the Pennsylvania and Dixie hammermills and impactors that are used for the crushing of bauxite, coal, coke, limestone and cryolite that are used in the manufacturing process. Drawings show the operation of both hammermills and impactors. Installation photos show the machines in use while the text and a flowsheet point out the importance of the crushers to the aluminum producers. Other producers of minerals will find that the problem of their industries are similar to aluminum where sticky as well as hard materials are crushed. Pennsylvania Crusher Company, Division of Bath Iron Works.

5. How to Step Up Tractor Shovel Production, Reduce Tractor Shovel Maintenance. Bulletin LO 200. The eight pages of this bulletin illustrate and describe the Lodover overhead and front-end shovel for use with International T-9 and TD-9 tractors. The Lodover attachment consists of a bucket and hydraulic controls that lift the bucket up and over the tractor to discharge at the rear. Manuevering of the tractor is avoided with the attendant wear and loss of time. Other attachments are pictured such as bulldozer blade, winch, lifting forks, and boom. Special buckets for narrow operation, light materials, snow, rock, and track cleaning are available. Manufacturing Division, Service Supply Corporation.

6. Kochring Model 304 Excavator. This booklet uses illustrations to bring out the design, construction, and application of this heavy-duty excavator. It is rated as ¾ yd. excavator with a 25-ton lift capacity as a crane on truck mounting. Attachments include shovel, hoe, crane, dragline, and clamshell. Crawler or rubber tire mounting are available. Detailed descriptions of the various features of the line such as self-cleaning crawler shoes, skeleton type tapered drum lagging, automatic boom hoist brake, booster clutch, continuous chain crowd, full rotating fairlead, and power boom lowering are included. Koehring Company.

7. K-P Spiral Woven Wire Conveyor Belts and Complete Conveyor Systems. Catalog No. 51. A thirty-five page booklet that illustrates the design and construction of woven wire belts. Typical installations are shown and additional applications are pointed out. Several tables give power formulas for different drives, conversions, weights, temperature factors and much other technical information. Korb-Pettit.

8. The Collection and Recovery of Industrial Dusts. Catalog No. 101. This booklet which is well illustrated with photos and drawings covers the field of dust collection from the introduction, pointing out the reasons for dust collection to the various methods used. Section headings are Van Tongeren Cyclones, "SF" Electric Precipitators, "LR" Collectors for fly ash, Low Draft Loss Collectors, Combination Mech./Elec., Special Purpose, and Hopper Valves. Buell Engineering Company.

9. Keystone Planned Lubrication. Bulletin BK-19. The twenty pages of this bulletin gives details on seven specialized lubricants that cover the majority of plant requirements with a minimum of types and densities. Information is given on characteristics, uses, densities, specifications, and container sizes. Lubricants for ball and roller bearings, plain and ring bearings, open gears, enclosed gears, speed reducers, and oils for cleaning, loosening and penetrating are covered. Keystone Lubricating Company.

10. Williams Heavy Duty Hammer Mills. Engineering Bulletin 672. Types of hammermills, applications, specifications and general information are all covered in this twenty-four page illustrated bulletin. Hammers, rotors, cages, bearings, feeders, grizzlies and other components of the machines are shown and described. Air classifying equipment and accessory items such as screens, conveyors, magnetic traps are illustrated. Williams Patent Crusher and Pulverizer Company.

11. Stop Wasting Your Profits This Way. Bulletin 5191. This folder illustrates and gives brief descriptions of a line of floor material handling equipment. Included are electric lift trucks, rider and walkie trucks, platform trucks, electric tractors, hand lift trucks, skids, portable elevators, storage racks and other specialities for storing, moving and lifting heavy materials. Barret-Cravens Company.

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December, 1951

PIT AND QUARRY:

Please send more information on items circled.

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NAME

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COMPANY

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CITY STATE

More Information, Please

12. Pannier Master Marker Stencils. E-1 through E-8. Catalog sheets that present an extensive line of marking devices and supplies. Types of stencils for marking round bars or other shapes, barrel heads, tubing, and all flat surfaces are covered. Stencil cutters, permanent stencils, adjustable models, individual numbers and figures, trademarks, and other shipping or record information markings can be obtained. Supplies and accessories are also listed. The Pannier Corporation.

13. Vento Steel Windows. The eight pages of this folder give information on casement, basement, utility and special type windows of steel construction. Dimensions, construction details, glass sizes, casings, and lintels are covered. These windows are designed for use in frame, brick and concrete masonry construction. Vento Steel Products Company.

14. Easton Industrial Transportation. Catalog 2. This folder illustrates the line of transportation equipment made by the company. Subjects covered are: Off-Highway Trailers and Truck Bodies; Mine and Quarry Cars; Rocker Dump Cars and Trailers; Light Industrial Cars and Trailers; Electric Industrial Trucks; Heavy Duty Industrial Cars; and Heavy Duty Intraplant Trailers. Types shown range from 2 tons up to 100 tons in capacity. Rocker bodies, side dumps, pan type, drop door, and other body types are shown. Easton Car and Construction Company.

15. Baldwin-Rex Double Pitch Roller Chains. Bulletin 51-2. This 12-page bulletin uses charts, photos, diagrams, and tables to show in detail the various types of double pitch roller chain in both drive and conveyor types. The attachments that are available and the various sprockets are also described. Weight and price information is included. Baldwin-Duckworth Division, Chain Belt Company.

16. What do G.M. Diesels do? 215A82. This booklet is written in rhyme and is illustrated by drawings of locomotives, busses, boats, power shovels, saw mills, and many other pieces of essential equipment that are powered by diesel engines. This is an educational piece that is useful alike to adults and children. The major applications of the three G.M. diesel manufacturing subsidiaries products are pointed out. Detroit Diesel Engine Division, General Motors Corporation.

17. S-F Belt Conveyor Carriers. Bulletin 2-C. Text, illustrations, tables, and diagrams bring out the important features of the line of conveyor carriers made by the company. In addition to varied types of carriers for many kinds of service, training carriers, impact carriers, and several specialized kinds are illustrated and described. Return idlers and trainers are shown. The construction of each type is shown by drawings while the text describes the salient points. Stephens-Adamson Manufacturng Company.

18. Ray-Man "F" Conveyor Belt. Bulletin No. 6915. This folder presents a conveyor belt designed for flexibility, tear-resistance, troughability, and fastener strength. It is recommended for small pulleys, heavy duty, greater flexibility, and applications where thick narrow belts are required or the danger of tearing or puncturing is present. This belt compliments the line of other belts made by the company. Manhattan Rubber Division, Raybestos-Manhattan, Inc.

19. Dust Recorder Checks Operation of Precipitators. Instrumentation Data Sheet No. 10.14-6. This folder pictures and describes a gas analyzer that maintains a continuous record of the dust in industrial gases. The principles and methods of operation are described and the results to be expected are pointed out. Applications are suggested such as analyzing waste gases for pollution records, and checking burner gases for solid content that might be injurious. Minneapolis-Honeywell Regulator Company, Brown Instruments Division.

20. Modern Methods of Gardner Grinding. Catalog MM-9-1951. This 32-page catalog shows use of flat surface disc grinding in numerous applications including cement block production. These machines feature grinding of two parallel surfaces in one operation. Illustrations show machines in actual operation while drawings point out the work performed. Text supplies additional information on the problems encountered and the specifications for the work. Gardner Machine Company.

21. 10 Reasons Why Unit is a Better Machine. Ten of the sixteen pages of this booklet illustrate and explain the reasons why the Unit crane is claimed to be better. Two pages illustrate the several models and point out the features while the rest of the booklet lists prominent users. Various attachments are illustrated in use on the models as are the types of mountings available. Unit Crane and Shovel Corp.

22. Let's Keep It Quiet. Catalog No. 108. This four-page folder describes a line of air-cushioned vibrators and their application. The operation of the vibrators and the air cushion is explained so that the quietness of operation is understood. The air-cushioned vibrators are especially useful where noise is a factor as in multiple installations, confined areas, etc. Mounting information as well as specifications of the various sizes and models using air cushioning for quiet operation are given. The Cleveland Vibrator Company.

23. Amscoating with Amsco Hardfacing Products. Bulletin "3G." This folder consists largely of a chart showing the parts that can and should be hardfaced for longer life and the correct rods to use. Sizes of the rods and the recommended applications are listed. A description of the rods in the Amsco line is included. American Manganese Steel Division, American Brake Shoe Company.

24. Dorr Thickeners for Chemical, Metallurgical, and Industrial Processing. Bulletin No. 3001. The 28-pages of this booklet are exceptionally well printed on heavy paper and are illustrated with excellent photos of installations and drawings that show the details not brought out in the photos. Color has been used to bring out the main points in a clever manner. Apart from the unusual layout and excellent typography the booklet presents the several types of thickeners in a clear and easily understood manner. The types are clearly differentiated in the text and the particular advantages of each are explained. The Dorr Company.

25. Rapistan Material Flow Conveyors. Catalog GC-52. This 28-page catalog has numerous pictures, sketches and charts that show the use of conveyors, trucks, and casters. The conveyors include gravity and power styles, permanent and portable, belt and roller types and straight and curved. Box car loaders and some special types are shown as well as the standard sorts. The Rapids-Standard Co.

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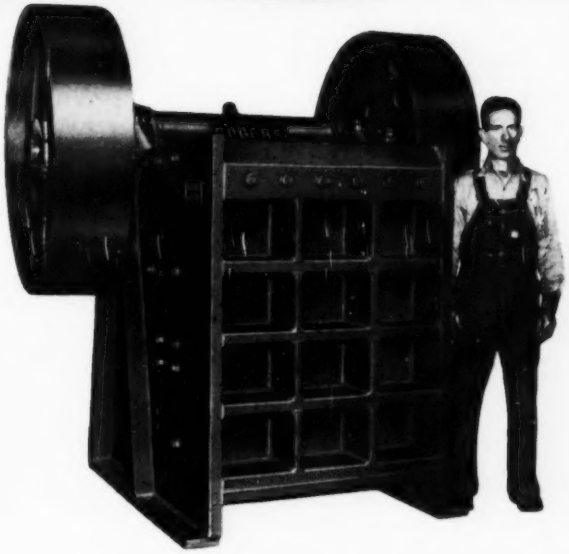
ROGERS *means Reliability*



ROGERS—A pioneer name in the rock products industry—builds heavy-duty welded steel frame jaw crushers from 10x16 to 32x40 sizes. The 21x36 illustrated is used in many intermediate size plants crushing a wide variety of materials. The long crushing jaws make high production possible at fine settings with very low maintenance. The six foot man standing by the crusher indicates the depth of the crushing jaws. Oversize shaft, spherical roller bearings, positive dust seals, welded mortise and tenon frame joints and heavy all-steel construction throughout assure ROGERS RELIABILITY in all ROGERS Jaw Crushers.

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ROGERS ENGINEERS WELCOME THE OPPORTUNITY TO DISCUSS YOUR CRUSHING PROBLEMS WITH YOU . . .

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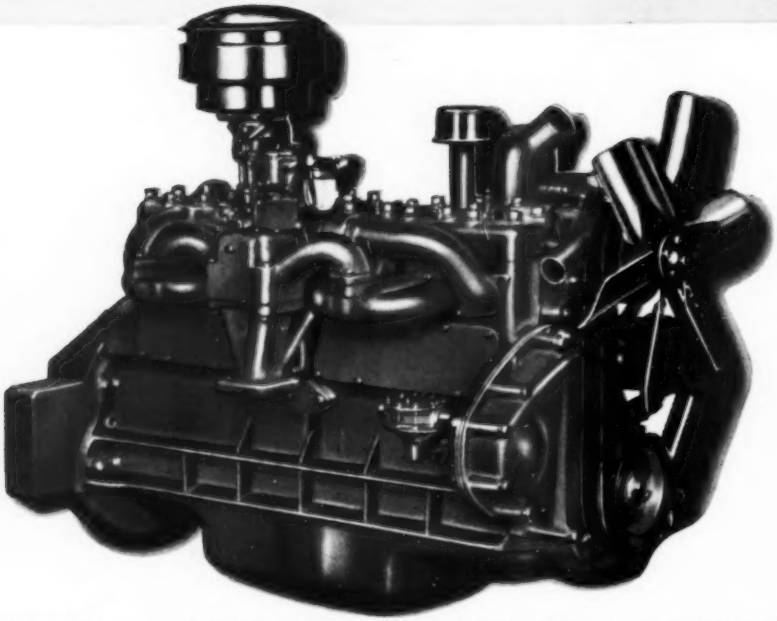
IRON WORKS COMPANY
Joplin, Missouri

LET'S FACE FACTS

about Industrial Engines



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Chrysler quantity production methods have been adapted to specialized industrial engine building. As a result, you get a custom-built engine at mass-production price levels. A Chrysler engine *costs less than many other engines*, yet it's still a special engine *designed* and *engineered* for a special job.

CHRYSLER HAS LOWER MAINTENANCE COSTS

Simplified, clean construction makes *field repair easier, faster, less expensive*. Famous Chrysler engineering achievements like Superfinished Wear Surfaces, dynamically balanced shafts and Chrysler-developed steels and alloys produce parts less subject to wear —*more hours of uninterrupted service.*

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Chrysler will keep you operating with a minimum of downtime. *Chrysler Parts and Service are always available!* Again quantity production and standardization keeps strategically located depots and Chrysler Industrial Engine Dealers supplied with complete stocks of parts for immediate delivery.

See your local Chrysler Industrial Engine Dealer, or write:
Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

CHRYSLER
Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE

trade notes

E. E. Brown

Arkell and Smiths, paper bag manufacturers, have announced the election of Ernie E. Brown as vice-president at a recent meeting of the board of directors. Mr. Brown has been associated with the paper industry for many years, and will make his headquarters at the company's New York office, 500 Fifth Ave.

Walter L. S. Alexander, 53, assistant sales manager of a division of Arkell & Smith's paper bag manufacturers, died recently at New Rochelle, N. Y. Mr. Alexander was born in Schenectady and was a resident of New Rochelle for the last seven years. He was a veteran of World War I, and is survived by his wife, Mrs. Mary Cameron Alexander.

Atlas Powder Company announces the appointment of James A. Gilruth as manager of its advertising and sales promotion division.

Mr. Gilruth was associated with the advertising department of Atlas for ten years until 1946, when he became sales promotion manager of the Storage Battery Division of Philco Corp., later Gould-National Batteries, Inc., at Trenton, N. J. Since June, 1950, he has been a senior editor on the staff of Harry W. Smith Inc., New York technical publicity firm.

Gardner Harvey, who has been acting manager of Atlas advertising and public relations division, is assisting in an advisory capacity with the reorganization of advertising and public relations functions.

H. H. Fair

Harry H. Fair of San Francisco was recently elected chairman of the board of directors of Caterpillar Tractor Company, succeeding C. L. Best, who died on September 22.

Elected to the board to replace Mr. Best was A. H. Brawner, president of W. P. Fuller & Company, San Francisco, a West Coast glass and wallpaper firm.

Mr. Fair's connection with the tractor business dates back to 1918, when he became a stockholder and director of Best Tractor Company, one of the constituents of Caterpillar Tractor Company. He was the prime mover in the formation of Caterpillar and has continuously been on its board and executive committee.

Mr. Brawner is a grandson of the original W. P. Fuller, founder of the Fuller firm. For many years he handled labor relations and personnel matters for the company. He has also served as company treasurer, secretary-treasurer, and vice-president, becoming president of the firm in January, 1946.

The election of five new officers and advancement of three other officers of Allis-Chalmers Manufacturing Company was announced recently by W. A. Roberts, president of the firm.

Four new vice-presidents were elected. W. G. Scholl, general sales manager of the Tractor Division, was named vice-president in charge of sales for this division; and C. W. Schweers, director of sales in the General Machinery Division, was named vice-president in charge of sales for that division.

J. F. Roberts, director of engineering in the General Machinery Division, was named division vice-president in charge of engineering; and W. A. Yost, manager of the mechanical power department, has become a vice-president of the General Machinery Division.

G. F. Langenohl, assistant treasurer, was elected treasurer and appointed assistant secretary. N. D. Johnson, assistant secretary, will continue to serve in that capacity and assume additional responsibilities as assistant treasurer.

Two new assistant comptrollers were also named. They are E. J. Dietrich, assistant to the comptroller, and T. D. Lyons, works comptroller.

Chain Belt Company has announced the appointment of the Cate Equipment Company as its new district sales office in the Salt Lake City area.

For the last 18 months Cate Equipment Company has served as a distributor for Rex and Baldwin chains and sprockets, Rex belt conveyor idlers, and power transmission equipment. As a district sales office, it will continue to maintain its distributor status.

Robert C. Becherer has been elected executive vice-president of the Link-Belt Company of Chicago, and Richard E. Whinrey, assistant general manager at the Ewart plant, Indianapolis, has been appointed general manager of this plant, succeeding Mr. Becherer.

Mr. Becherer, elected vice-president

R. E. Whinrey

R. C. Becherer

last March, joined Link-Belt in 1923, and had been general manager of the Ewart plant since 1947. Mr. Whinrey came to Link-Belt in 1925.

The Timken Roller Bearing Company, Canton, O., has announced the appointment of George T. Humphrey Jr. as assistant general manager of the Service Sales Division. Mr. Humphrey was formerly assistant branch manager of the Service Sales Division of Dallas, Tex.

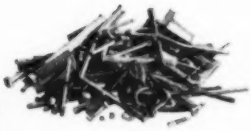
• The semi-annual sales convention of the Pettibone Mulliken Companies was held recently at The Moraine-on-the-Lake, Highland Park, Ill. In this group were (standing): R. A. Brown, C. K. Smullen, J. C. Rogers, (seated) A. E. Ainlay, C. O. Stewart, E. J. Seifert (president), T. R. White, and C. W. Cedarette.

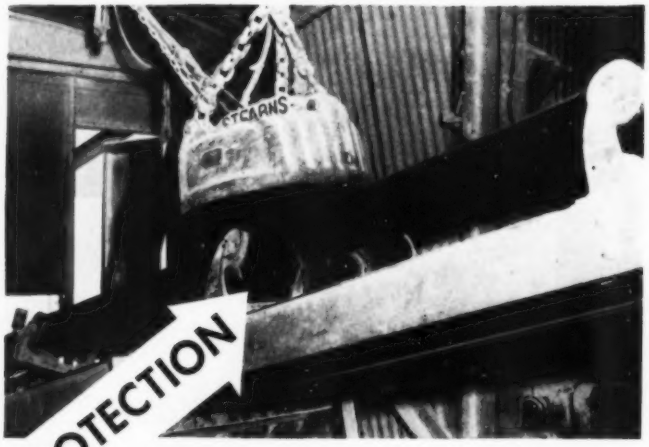
REMOVE TRAMP IRON

WITH *Stearns*

SUSPENDED MAGNETS

LOWEST COST WAY





SAVES MONEY!

Here's the economical way to protect crushers, grinders, pulverizers and other vital equipment — use a STEARNS Suspended Magnet over your conveyor belt or head pulley. This STEARNS Circular Suspended Magnet is one of two installed at the National Gypsum plant at Savannah, Ga., to remove all tramp iron before the rock enters the crushers.

You can protect your machinery and purify your product the low cost, positive way. Eliminate all tramp iron with STEARNS Suspended Magnets — this means fewer repair bills on crushing equipment, fewer shutdowns and higher production.

Whether you are handling rock, slag, coal or ore, investigate STEARNS Suspended Magnets; they're easy to install and have low operating and maintenance costs. Write today for descriptive literature on both circular and rectangular suspended magnets.

Complete laboratory and testing facilities available for separation tests on your materials.

STEARNS Circular Suspended Magnet for inclined installation over head pulley.

Rectangular Suspended Magnets available in sizes and shapes to meet your requirements.

Foremost in the Magnetic Field

Stearns MAGNETIC INC.

687 S. 28th St., Milwaukee 15, Wis.

A $1,000,000 building expansion program to increase production facilities of the Detroit Diesel Engine Division of General Motors has been announced. The announcement highlights a production figure of over 50,000,000 horsepower in 2-cycle diesel engines attained by the division since 1938. The expansion program will add almost 80,000 sq. ft. to the 1,000,000 sq. ft. now under cover.

Cecil H. Fisher, manager for the last 20 years of the storage and delivery section of the Du Pont Company's explosion department, retired recently after a career of 33 years with the company. He has played a prominent role in promoting the safe handling of commercial explosives in this country, having served on various industry committees and assisted state and federal governments in promoting the safe transportation and storage of explosives.

Henry T. Rittman Jr., who has been assistant manager of the storage and delivery section, succeeded Mr. Fisher.

J. R. Coffing

Coffing Hoist Co., Danville, Ill., has announced the election of J. R. (Jim) Coffing as vice-president in charge of sales, advertising, and general office administration.

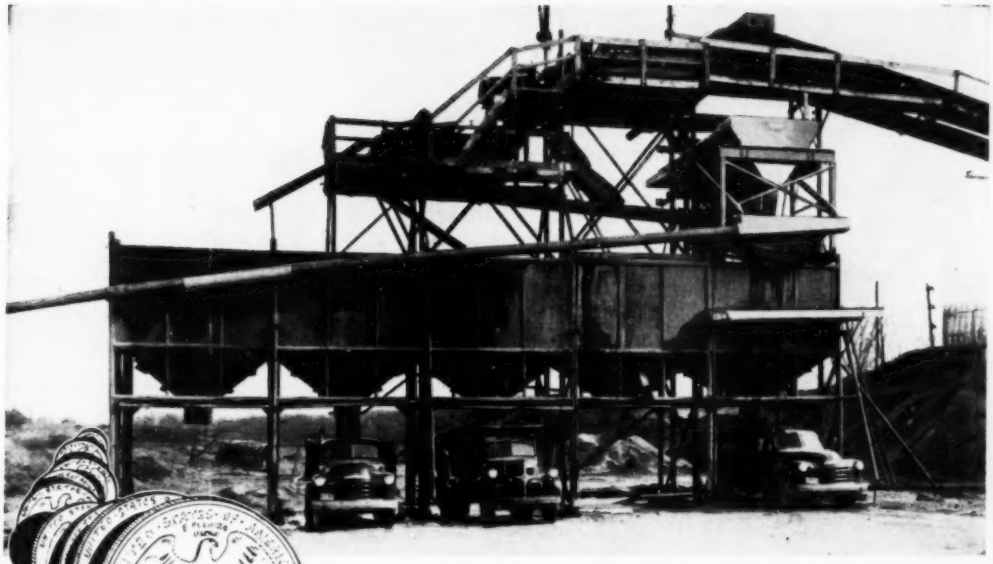
Mr. Coffing was first associated with the company when at the age of 12 he started as clean-up boy. He worked his way up through the various departments of production and administration to become general sales manager.

Edwin L. Hettinger, for more than 30 years director of optical research at Willson Products, Reading, Pa., died recently at the age of 72. He had been associated with the firm, for 38 years.

Mr. Hettinger was a specialist in the industrial applications of glass as an eye protective material. He was one of the pioneers in the development of the modern safety goggle, through his work on the now-universal process of heat-treating glass lenses to increase their impact resistance. In addition, he contributed to research on glass formulas providing cut-off of ultraviolet and infrared rays which resulted in the development of protective tinted glass for welders and others exposed to harmful forms of radiant energy.

Arthur W. Bartling has been named manager of product sales practices for the General Electric Company's Apparatus Sales Division. the distributing organization through which products of the apparatus and industrial products operating departments are sold.

Mr. Bartling had been general sales manager of the firm's Small Apparatus Division. His new headquarters will be in Schenectady, N. Y.



Ever hear Eagles Sing?

IT SOUNDS like a cash register symphony. A couple of Eagles are singing at the plant of Quillin Bros., Lodi, Ohio, shown here. Material from the bottom deck of screen is chuted to an Eagle Water Scalping Tank which concentrates solids and scalps off excess water. The concentrated material is bled to an Eagle Washer - Classifier - Dehydrator, directly below. Adjustable U-shaped weirs enables Quillin Bros. to retain the mesh they want when they want it. Any contamination in sand is washed away. Material goes to bins with excess moisture removed. Cost per yard for processing this premium material is figured in cents. If your profit picture isn't what it should be let Eagles sing for you! Ask for

EAGLE BREAKER BALLS --- handy around the quarry or pit

Made of a tough, special, semi-steel. For breaking man-size rock down to crusher size, knocking down banks, breaking up scrap or concrete. Replaceable hooks. Four standard sizes: 1500 lb., 2000 lb., 3000 lb., 4000 lb. Also special sizes. Ask for Bulletin 950.

EAGLE IRON WORKS

133 Holcomb Ave.
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Screw Washers

Log Washers

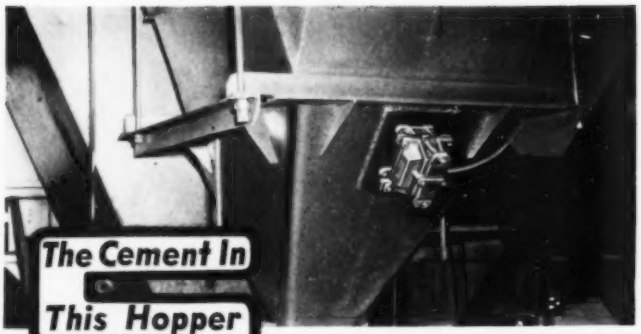
"Swintek" Dredge Ladders

Clay Crushers

Clay and Cinder Grinders

Shale Planers

Coal Crackers



The Cement In This Hopper Flows Freely

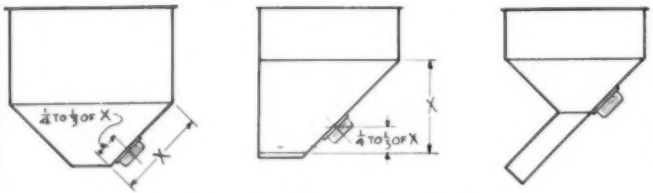
because its equipped with a

SYNTRON

"Pulsating Magnet"

ELECTRIC VIBRATOR

Simple, pulsating electromagnets that work right from your AC line — fasten to bins, hoppers and bunkers like these —



and keep the material—hot or cold—dry or damp—coarse or fine—free flowing.

They're available in a number of sizes for application to most anything from a 1 cu. ft. hopper up to big bunkers containing hundreds of tons.

They provide a safety factor, too—by eliminating the necessity for your men to climb ladders or framework and balance in precarious positions while spading, rodding or sledging clogged materials.

Syntron Engineers will be glad to recommend the proper Vibrator for your problem—send dimensional data, gauge of walls, type of material, etc.

SYNTRON COMPANY
385 Carson Avenue Homer City. Penna.

Two vice-presidents of the Westinghouse Electric Corporation have been assigned new duties to expedite the company's defense activities.

L. E. Osborne, formerly vice-president in charge of manufacturing, has

Tom Turner

L. E. Osborne

been named to the newly created post of executive vice-president, defense products. Mr. Osborne has been assigned responsibility and authority for all defense efforts of the company.

Tom Turner, vice-president in charge of labor relations, retains that post and also assumes the manufacturing responsibilities that were formerly assigned to Mr. Osborne. His new title will be vice-president in charge of manufacturing and labor relations.

Appointment of John A Rozos as director of exports of Dodge Manufacturing Corporation, Mishawaka, Ind., has been announced.

Two sales engineers with Cummins Engine Company, Inc., Columbus, Indiana, have been transferred from the factory to Cummins regional offices as assistant regional managers.

R. A. D'Amour has been appointed assistant regional manager, Washington, D. C., region.

G. W. Plondke has been appointed assistant regional manager, Central Region, with offices in Chicago.

Longest strike in the history of Caterpillar Tractor Company, Peoria, Ill., has ended, and factory operations resumed on October 1. The strike was called on July 30 by CIO-UAW Local 974.

Settlement followed two months of negotiations on wage increases. Company and union representatives, meeting in Washington, D. C., with federal conciliators, reached an agreement on September 27 which was ratified by the union membership on September 30.

The agreement provides for an across-the-board increase of 13½ cents per hour for employees in the bargaining unit, along with a cost-of-living wage adjustment next February and is being submitted to the Wage Stabilization Board.

The loss in sales over two months was $75,000,000, according to a projected estimate. The community lost an estimated $18,000,000 in wages and local purchases. More than 22,000 production employees were idle during the strike.

The Frank G. Hough Company has received the 1951 Direct Mail Advertising Association's Best of Industry Award for the second year. Hough also won the award in 1949.

The award was presented to Raymond P. Wiggers, advertising manager, at the annual convention of the D.M.A.A. in Milwaukee. Hough's advertising department, aided by the Ervin R. Abramson Advertising Agency, planned and executed the winning campaign.

Francis K. McCune, Schenectady, N. Y., has been appointed assistant manager of the General Electric Company's Engineering Services Division. He formerly was manager of engineering of the company's Large Apparatus Division.

Worthington Pump and Machinery Corporation has named seven plant executives to new posts.

Executives in new posts include: George P. Passmore, assistant to the vice-president in charge of manufacturing at Harrison, N. J. Mr. Passmore, who was works manager of the Wellsville, N. Y., plant since 1941, was succeeded by A. M. Tullo, formerly assistant works manager at the Harrison plant.

G. P. Passmore

W. D. Sizer

John Burlick, in turn, succeeds Mr. Tullo as assistant to the works manager at the Harrison plant, in charge of industrial engineering activities. He has been manager of the methods and standard department.

Max A. Heyman is now assistant to the works manager at the Harrison plant in charge of production control activities. He has been manager of the production department at Harrison.

New posts include: W. D. Sizer, manager, regional engineering and service department, with headquarters at Harrison. Mr. Sizer has been executive engineer for the Harrison plant since 1940. He was succeeded by George F. Habach, who was chief engineer of the centrifugal engineering division.

Everett Schmachtenberg, chief engineer of the centrifugal engineering division at the Harrison plant.

Joseph S. Quinn and Floyd B. Younginer have been named sales representatives in the St. Louis and Chattanooga district offices, respectively, of Allis-Chalmers general machinery division. Both men specialized in sales and engineering training in the company's processing machinery department before receiving their new assignments.

K-P *Engineered*

WIRE SCREENS

* **SIEVING**
* **SIZING**
* **SEPARATING**

Korb-Pettit Wire Screens are not only first quality in material and workmanship but are engineered for the job involved. Available in High Carbon Spring Steel and Oil Tempered Spring Steel for extreme abrasion resistance. Designed for all types of vibrators and rotary equipment.

Wire Screens,
Spiral Woven Wire
Conveyor Belts,
Special Purpose
Conveyors
designed & manufactured
Wire Partitions,
Machine and Window
Guards, Cages,
Enclosures, Grilles, etc.

KORB-PETTIT
WIRE FABRICS AND
IRON WORKS
INCORPORATED
Engineers and Manufacturers
1503 No. Mascher St.
Philadelphia 22, Pa.

ASK FOR HANDBOOK NO. 36

Appointment of Jay Misenhimer to the newly-created position of manufacturing engineer is announced by the Hyster Company.

J. Misenhimer

Since joining the Hyster Company in 1929, Mr. Misenhimer has been machine shop foreman, manager of sub-contracting, and factory manager of the Danville, Ill., plant. After a brief period during which he was in the retail lumber business, he rejoined Hyster. In his new job Mr. Misenhimer will work closely with the design engineering department. His principal function will be to engineer and supervise assembly techniques and procedures.

Eric O. Ridgway has been appointed director of research and development of the Thermoid Co., Trenton, N. J. A native of South Africa, Mr. Ridgway was educated in South African, English, and American schools. He served as assistant to the president of a New Jersey rayon manufacturing concern before forming his own chemical research company in 1936. In partnership with others he later formed Ridbo Laboratories at Paterson, N. J.

Thermoid has acquired controlling interest in Ridbo, including patents on rubber compounding materials, drying oil properties and rosin acid derivatives used in synthetic rubber and the synthesis of hormones.

C. H. Jennings

Charles H. Jennings, engineering manager, Welding Department, Westinghouse Electric Corporation, has been elected president of the American Welding Society.

Mr. Jennings is the author of more than 30 articles and two books on welding. He has served in various capacities with the American Welding Society, including the offices of first vice-president, second vice-president, chairman of the Pittsburgh section, district vice-president of the Buffalo section, and as a member of the Welding Handbook Committee.

Straub Manufacturing Company, Oakland, Calif., has announced the appointment of two distributors for Kue-Ken crushing equipment in the Oregon area. Cal.-Ore. Machinery Company, 944 South Central Avenue, Medford, and Edward L. Kropp Company, formerly Western Road Machinery Company, 1415 S.E. 8th Avenue, Portland 14, are the firms that have been named.

"Vital Statistics" **FOR HANDLERS OF BULK MATERIALS**

OVER 1200

SCHAFFER POIDOMETERS

now serving industry

WEIGHING • BLENDING • FEEDING • MIXING
RECORDING • PROPORTIONING

An impressive number of highly successful Poidometer installations are speeding the flow of dry materials in many countries.

These fast, accurate, automatic machines supply valuable weight-information that promotes product uniformity and increases output.

Simple to operate and durably constructed, SCHAFFER Poidometers assure sustained, high-economy service.

Available with remote controls for showing and changing feed rate, and with total weight recorders.

Write for Catalog No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

A few days ago a reader wrote, as follows: "Recently the number of our injured employees who filed suit for damage or compensation, and the great amount of money spent in defending these claims, has been of considerable concern to our company. I suggest that you review new law suits in PIT AND QUARRY in view of preparing employers to cope with this present menacing situation, and *know* when it is inadvisable to expend money, time, and effort in defending these suits."

All states have adopted laws requiring employers to perform certain legal duties, such as submitting detailed reports to certain state officials of the number of regular employees, the duties of such employees, the salary earned by such employees, etc. In many instances, employers are required to contribute to a fund set aside for compulsory payment of compensation to injured employees.

Under the common or ordinary law an employee was not entitled to receive damages for injuries, unless the testimony proves that such injuries result from *negligence* on the part of the employer. However, the Workmen's Compensation Laws definitely specify the amount of compensation to which an injured employee is entitled, provided that the injury was sustained while the employee was acting within the scope of his employment.

The courts have consistently held that employers who failed to comply with the State Workmen's Compensation Laws are not only subjected to payment of heavy penalties but, also, automatically become liable in *damages* for *all* injuries sustained by their employees.

For illustration, in *Holton v. Clayco Co.*, 145 S. E. 637, it was shown an employee negligently injured himself. He sued his employer for damages and introduced testimony showing that the employer had failed to abide by the State Workmen's Compensation Act.

The court promptly held the employer liable, notwithstanding the cause of the injury, and said:

"When an employer comes within the purview of the Workmen's Compensation Act and is not protected by it, and a suit is brought against him for an injury occurring to one of his workmen, received in the course of his employment and arising out of it, he (employer) cannot interpose as a defense assumption of risks, or negligence and carelessness on the part of the workman, where the employer has been negligent himself, and from which negligence the injury resulted."

Therefore, it is quite apparent that an employer who fails to conform with the State Workmen's Compensation Act materially increases his chances for financial losses resulting from injuries to employees.

Employee Must Comply

Conversely, it is true that all employees are legally bound to abide by the State Workmen's Compensation Act, otherwise the employee cannot recover compensation for an injury.

For instance, in *Montello Company v. Schultz*, 222 N. W. 315, it was shown an employee was injured while performing his regular duties. However, he failed to give his employer a *written* notice of the injury, as required by the State Workmen's Compensation Act.

Although the counsel for the employee proved that the employer witnessed the accident causing the injury, the court held the employee not entitled to compensation, saying:

COMPARE... LODOVER
WITH ANY FRONT END TRACTOR SHOVEL

... You'll find two important differences! Because LODOVER overhead loading eliminates 2 full turns in every loading cycle, you get —

1. An average of approximately 50% more yardage moved per working day.
2. Lower maintenance cost due to less wear on crawlers, clutches, transmission and 9 other points.

That's why LODOVER operation means extra profits for you on every job!

Write for booklet "How to Increase Tractor-Shovel Production, Decrease Tractor-Shovel Maintenance."

ELIMINATES 1200 TURNS
(In a normal 8 hour shift)

1 yard Combination Overhead and Front End Shovel for INTERNATIONAL CRAWLER TRACTORS

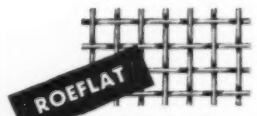
MANUFACTURING DIVISION
SERVICE SUPPLY CORPORATION
2006 ERIE AVENUE, PHILADELPHIA, PENNSYLVANIA

LODOVER Sold by Your INTERNATIONAL HARVESTER INDUSTRIAL POWER DISTRIBUTOR

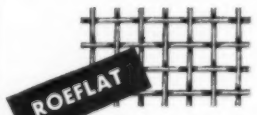
AGGREGATE WIRE SCREENS

Roebling offers the right metal or alloy for extra economy

made of Abraso... high carbon steel wire



made of Roetemp... oil-tempered steel wire



available in stainless steel, monel and other alloys

WHETHER ROEBLING ROEFLAT or some other construction best meets your screening requirements, Roebling goes a long step farther... offers you each and every construction in the exact metal or alloy to bring maximum screen life and economy in your operations.

As one example, the vastly increased working life afforded by Roebling Roeflat's unique construction can be boosted still further by adopting Abraso, for its high resistance to vibration fatigue; Roetemp, for abrasion and fatigue resistance; stainless steel, monel or other alloys to overcome corrosion problems.

Get the whole Roebling Aggregate Screens story... write for Catalog W-903.

WOVEN WIRE FABRICS DIVISION

John A. Roebling's Sons Company
Roebling, New Jersey

Woven Wire Fabrics Division
John A. Roebling's Sons Co., Roebling, N. J.
Gentlemen: Please send me free copy of Catalog W-903 giving up-to-the-minute information about Aggregate Screens.

Name.....
Company.....
Address.....
City..... State.....

ROEBLING

"The Workmen's Compensation Act is statutory in its origin and whatever rights employees have in regard to compensation accrue solely by virtue and under the provisions of the statute . . . As a part of this statutory scheme the employee is required to give notice of his disability. The period of such notice is limited in order to enable the employer to determine whether the claim is a *bona fide* one, and to afford him an opportunity to examine into the facts concerning the injury, and the extent of such injury, and all other necessary facts involved in a compensation claim."

Within Scope of Employment

Generally speaking, an employee is not entitled to compensation under the State Workmen's Compensation Act unless the injury arises from and is incidental to the particular work which the employee is hired to perform.

For instance, in *Lev v. Krug Company*, 225 N. W. 559, the testimony showed that an employee was hired as a watchman of a gravel pit. One day he was sent on an errand by his employer to a cement plant. The vehicle in which he rode was owned by his employer. During the trip an accident happened and a piece of glass injured the employee's eye.

The employee sued to recover compensation, but the court held that the acident did not arise from the employment. Therefore, the employee was denied compensation. This court said:

". . . Unless the proof justifies us in concluding that this particular risk or danger which resulted in plaintiff's (employee's) injury was one which was peculiarly incident to his work as the caretaker and watchman of a gravel pit, it cannot be said that the accident arose out of his employment."

Damage vs. Compensation

As above explained, an employee who is injured "within the scope of the employment," may recover compensation under the State Workmen's Compensation Act irrespective of whether the injury resulted from the employee's negligence. However, this rule of law positively is not applicable to suits by employees for damages. In other words, an injured employee who sues his employer for damages *cannot* recover if the testimony shows that the injury was caused by the employee's own negligence.

For example, in *Billeter v. Rhodes & Jamieson*, 231 Pac. (2d) 93, it was shown a foreman on a construction job had his fingers cut off and he sued for damages. The higher court refused to award the foreman damages on the grounds that the injury resulted from his own contributory negligence.

The facts in detail are: A contractor had a Mixermobile which is a large industrial type of cement mixer mounted on wheels. Toward the rear of the Mixermobile is a large circular revolving metal drum in which the cement is mixed. Attached to the exterior of this drum is a metal flange or fin, which is a piece of metal welded to the outside of the drum and extending out 1½ to 2 in. from the drum. The drum so revolves that, on the right hand side of the mixer, the metal fin comes from the

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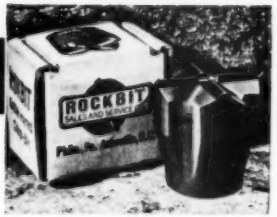

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top towards the bottom of the equipment. The purpose of this fin is to trip a counting and timing device. On the right hand side of the Mixermobile, and attached to the frame there is a steel bar which acts as a rigid brace for the equipment. As the drum revolves it passes underneath this stationary cross brace. One day the foreman placed his left hand at the point on the cross brace directly opposite to the rotating fin. As the fin passed the cross brace, there being insufficient clearance between the fin and the brace, the fin cut off three of the foreman's fingers.

In holding the foreman not entitled to damages, the higher court said:

"He (foreman) admitted that he had worked around this and similar Mixermobiles for several months, had helped to spot them and set them up, and had helped to repair them. For 25 years or more he had worked around heavy construction jobs and was familiar with heavy construction equipment, including cement mixers. It is true that a contractor is not ordinarily liable for injuries sustained by a workman as a result of defects which are clearly visible or obvious to him, or when he has actual or constructive knowledge of the existence of such defects. He could not close his eyes to dangers that were obvious, and blindly enter a place that he knew or should have know was dangerous. If he was contributively negligent he may not recover."

Exceptions to Rule

While it is generally true that an injured employee cannot recover compensation, under the State Workmen's Compensation Act, for injuries *not* received within the scope of the employment, there are exceptions to this rule.

In many instances, employers confuse the terms "within the scope of the employment" and "in the service of the employer." However, it is established that an employee who is injured "while serving his employer" may not be "acting within the scope of the employment" when the injury is sustained. Under the former circumstance, the employee is entitled to compensation *only* when the act resulting in the injury is *intended* by the employee to benefit the employer, but the employee always is entitled to compensation for an injury sustained while working within the scope of the employment.

The law is well settled that an injury arises out of an employment, for which the employee is entitled to compensation, when it occurs in the course of the employment and is the result of a risk involved in the employment or incident to it.

The injury is thus a natural or necessary consequence or incident of the employment, or of the conditions under which it is carried on. Sometimes the employment will be found directly to cause the injury, but more often it arises out of the conditions under which it is required to be performed, and before the injury can be found to arise out of the employment for which the employer is liable.

Sometimes litigation arises when an employee is injured while attending to personal duties or necessities such as eating lunch, getting a drink of water, attending to bodily necessities, while the employee is coming to or going from work, during rest period, or at other times when the employee is not actually rendering a service for his employer, but is performing acts incidental to the employment.

Generally speaking, the employee is entitled to compensation under the State Workmen's Compensation Act for an injury arising "in the course of the employment" if the accident occurs while the employee is doing what he may reasonably be expected to do at a place where he may have good reason to be during that time. Moreover, an injury arises "out of" the employment when the risk resulting in the injury may have been contemplated by a reasonably prudent employer.

For example, in the recent case of *Schockley v. Morristown Company*, 11 S. W. (2d) 900, the court explained the law on this subject by saying that an employee while at work for his employer may do all things which are necessary to his own health and comfort, even though they are personal to himself, and such acts will be considered "incidental" to his employment. And while recognizing the general rule that an employee cannot be awarded compensation when he has turned aside from his employment for his own purposes, there are many departures by an employee which do *not* deprive him of compensation, for example, in seeking toilet facilities, in

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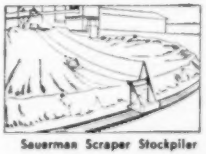

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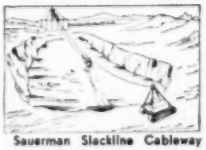

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preparing for the street, in quenching his thirst, in eating a lunch, in seeking fresh air, in seeking shelter from a storm, in protecting himself from cold, or even in saving his personal belongings from injury.

Injured During Fight

Generally speaking, an employee injured during a fight with a fellow employee cannot recover either compensation or damages.

For example, in *Johnson v. Guggenheim Company*, 215 Pac. (2d) 178, it was shown that two employees were loading merchandise on a truck when they got into an argument. One employee struck the other named Johnson with a hook made of steel. The blow knocked Johnson down, and he lay unconscious until removed to a hospital. As a result of the blow it was necessary to remove one of his eyes.

Johnson filed suit to recover compensation under the State Workmen's Compensation Act. The higher court refused to award Johnson any compensation, saying:

"An employee cannot recover under the Workmen's Compensation Act for an injury inflicted in an assault upon him by another employee unless the employer had reason to anticipate that injury would result if the two continued to work together."

For comparison, see *Peavy v. Merydith*, 211 P. 1113. Here the higher court held that an employee *intentionally* injured by another employee *cannot* recover under the Workmen's Compensation Act, unless the wrongful conduct has become habitual and the habit is known to the employer.

Therefore, the law is established that an employer is not liable for payment of compensation to an employee injured by another employee during a fight, unless the testimony shows that the employer had reason to anticipate that an injury would result if the two workmen continued to work together.

Volunteer Worker Injured

Modern higher courts consistently hold that a mere "volunteer" worker cannot recover compensation for an injury. In other words, a person who works for another of his own volition cannot establish the relation of employer and employee, so as to base any claim for damages or compensation on the duty owed by the employer to his employee.

For illustration, in *Alexander v. Hixson*, 44 So. (2d) 487, it was shown one Alexander was seriously injured while in the process of lifting a concrete vault being installed in a cemetery by a contractor.

Alexander sued the contractor for damages and compensation, but the higher court refused to hold in favor of Alexander because the testimony showed that Alexander was merely assisting the contractor for mere accommodation. The court said:

"Alexander neither received nor requested wages or compensation of any kind. It was a reciprocal good fellowship agreement for mutual benefit."

Must Follow Up Claim

Modern higher courts consistently hold that an injured employee will not be awarded compensation if the testimony shows that he failed to follow up his disability claim, or allowed the claim to remain dormant for an unreasonable period of time.

For example, in *Hattabaugh v. B. H. & W. Mining Company* 230 Pac. (2d) 923, the testimony showed facts as follows: An employee namer Hattabaugh in 1937 was employed by the B. H. & W. Mining Company. He was struck in the right eye by a piece of rock thrown by a mechanical drill. He was knocked down and blood ran from his eye. He was treated, in and out of the hospital, by two doctors. He returned to work some two weeks later but, for several more weeks, he wore a patch over his eye. Nothing further was done until he filed a claim for compensation in 1948, claiming damage to both eyes as a result of the accidental injury. The Commission refused to award compensation, and the higher court approved the verdict, saying:

"Under these facts and circumstances and considering further that no attempt was made by claimant to communicate with the employer or make any claim or complaint about an eye condition which he says he had all these years, and considering further the inherent weakness of the testimony of the doctor pointed out above, we hold that the State Industrial

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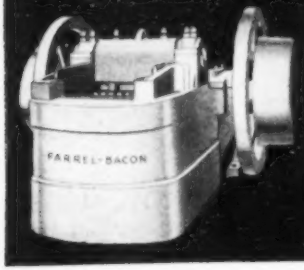

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Commission was justified in finding from the review of all the evidence that the disability was not the result of an accidental injury."

Law of Silicosis

Considerable discussion has arisen from time to time over the legal question: "Under what circumstances may an employee recover compensation for disability arising from the disease silicosis?"

It is well known, of course, that there is a great hazard to employees who work at the so-called dusty trades. Therefore, it has been considered very important by the courts that some simple and dependable rule shall be formulated from which it may be quickly and conveniently determined under what circumstances an employee suffering from silicosis, or having subsequently contracted tuberculosis, may be entitled to payment of compensation under State Compensation Laws, or to a judgment for damage under the common law.

According to a late higher court decision, an employee who has silicosis cannot receive payment of compensation, under the State Workmen's Compensation Act, unless he proves definitely that his last place of employment had dust in such quantities to create the hazard of silicosis.

For illustration, in *Collier-Dunlap Company et al* v. *Dickerson*, 239 S. W. (2d) 9, it was shown an employee filed a claim for compensation for disability caused by silicosis. He proved that he had worked as a miner for 30 years; that he had silicosis; that he was able to work as a miner for his last employer for 25 months before becoming disabled; and that the mine of the last employer was dusty. However, the employee failed to prove that his last place of employment had silica dust which was a hazard of silicosis. Therefore, the higher court refused to award compensation to the employee, and said:

"If the rock or other elements in appellant's mine give off silica dust causing the hazard of silicosis to exist, then such fact can be proved without great difficulty. Without such fact being proved, the evidence is not sufficient to warrant the making of an award."

For comparison, see *Phelps Corporation* v. *Ford*, 203 P. (2d) 633. In that case it was contended that the court should take judicial notice of the presence of silicon dioxide dust in the Bisbee area where an employee worked without the necessity of conclusive evidence that the dust was a hazard of silicosis.

The higher court refused to award compensation to an employee who contracted silicosis, saying:

"In order for any tribunal, whether it be judicial to take judicial notice of any fact, it must be so notoriously true as not to be subject to reasonable dispute or must be capable of immediate accurate demonstration. A high degree of probability of the truth of a particular proposition cannot justify a tribunal in taking judicial notice of its truth. A fact of which a court may take judicial notice must be indisputable."

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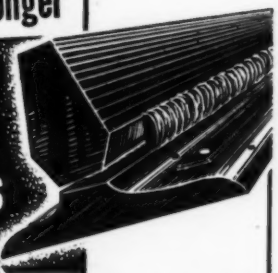

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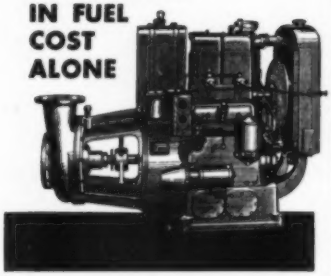

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CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 88507 (2)—Crushed stone, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Joliet, Ill., to the following points:

	Per Net Ton
Cedar Springs, Mich.	$2.21
Sand Lake, Howard City, Morley and Pierson, Mich.	2.26
Stanwood, Mich.	2.28
Big Rapids, Paris, and Reed City, Mich.	2.31
Orono, Mich.	2.33
Ashton, Leroy, Tustin, and Cadillac, Mich.	2.38

Docket 88511 (2)—Proposed to establish on stone, crushed, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Bloomville, O., to Center Line, Mich., 191 cents per net ton.

Docket 88525 (2)—Proposed to establish on limestone, agricultural, unburned, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Maple Grove, O., to Montpelier, O., of 177 cents per net ton.

Docket 88534 (2)—Proposed to establish on stone, fluxing, furnace or foundry, molding or refractory (unburned) in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car furnished, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Robinson (Lawrence County) Pa., to Youngstown, O., 87 cents per gross ton.

CENTRAL TERRITORY RAILROADS, FREIGHT TRAFFIC COMMITTEE

Docket 88538 (2)—Proposed to establish on stone, crushed, or stone screenings in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Bloomville, O., to various destinations in Michigan shown below:

	Proposed Rates in Cents Per Net Ton
Annpere and Hillsdale	$1.91
Charlotte, Owosso, Battle Creek, and Lansing	2.13
Diann	1.73
Durand, Albion and Rives Junction	2.01
Lakeland	1.89
Milan	1.77
Tecumseh	1.79
Ypsilanti	1.95

Rates include ExParte 162, 166 and 168 increases, subject to ExParte 175-A increases.

GENERAL FREIGHT TRAFFIC COMMITTEE, EASTERN RAILROADS

Bulletin G-4830 (Shipper)—Proposed to establish a rate of $3.64 per net ton on stone, crushed, and screenings, in open-top cars, carload minimum weight 90 percent of marked capacity of car from Buffalo, N. Y., to Bayonne and Bayway, N. J. Rate subject to ExParte 175 increase.

Bulletin G-4834 (Shipper)—Stone dust, unburnd, carload minimum weight 30 tons from Plum Run, O., to Scarlet, W. Va., $3.11 per net ton, subject to ExParte 175 increase.

ILLINOIS FREIGHT ASSOCIATION

Docket IRC 511-1093—Sand and gravel carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply:

From Bloomington, Ill. To	Proposed Rates in Cents Per Net Ton, Subject to X-175-A
Litchfield, Ill.	139
Mt. Olive, Ill.	153
Alhambra, Ill.	154
Marine, and Mont, Ill.	168
Glen Carbon and Peters, Ill.	169

NORTH PACIFIC COAST FREIGHT BUREAU DOCKET

(X) NC-2219 (S)—Request for rate of 5½ cents per hundredweight on sand

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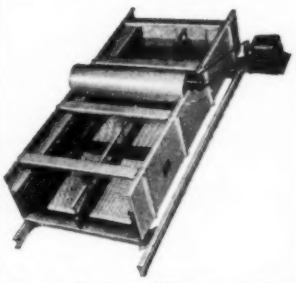

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and gravel, carload, from Umatilla, Ore., to Pilot Rock, Ore. Minimum weight 50 tons.

Docket NC 1949 (Supplement 1) (S) — Limestone, crushed, ground, or powdered in open cars, carload, Cooper, Wash., to Drain, Ore., 20 cents per hundredweight, and Roseburg, Ore., 21 cents minimum 50 tons.

Docket NC 2230 (S)—Silica rock, carload (for fluxing purposes), Paulson, B. C., to Tacoma, Wash. Request for through rate.

PACIFIC SOUTHCOAST FREIGHT BUREAU PROPOSALS

Docket 2229 (S)—It is proposed to establish on rock and lime, in open cars, from Bowman to Pittsburg, Calif., 9 cent per hundredweight, minimum 50 tons, in Pacific Southcoast Freight Bulletin 278.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 8410 (a)—Lime and/or dry building mortar, described on page 64 of Southern Freight Bureau tariff 382-E, Ladds, Ga., to Atlanta, Ga., 314 cents on 15-ton minimum and 251 cents on 25-ton minimum. Not subject to X 162-6-8.

Docket A 8627 (a)—Proposed to amend rate published on lime, carload, Long View, No. 2 Alabama, to Pascagoula, Miss., as described in 505 Southern Freight Tariff Bureau, tariff 382-E to read 494 in lieu of 474.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 58115 (I)—Proposed to establish on limestone, ground or pulverized, from Limedale Spur, Ark., to Denver, Colo., rate of $6.05 per net ton in closed cars and rate of $5.56 per net ton in open-top cars, in bulk, in bags or in barrels, carload rates, not subject to ExParte 162, 166 or 168 increases.

TEXAS-LOUISIANA FREIGHT BUREAU

Docket 11897 TX (I)—Proposed to establish on lime (not suitable for building purposes) from Cleburne to Houston, Tex., rate of $4.00 per net ton, including all increases, minimum weight 25 tons in carloads.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket X-E-41 1476 (S)—Proposed to establish through rates based on combination of rates in effect June 30, 1946, plus ExParte 162-166-168 increases to apply in both open and closed cars on crushed stone, carload, Sioux Falls, Dell Rapids, and Spencer, S.D., to destinations in Michigan, Indiana, New York, Ohio, Pennsylvania, and the province of Ontaria.

Docket E-41-1480 (S)—Crushed stone, carload minimum weight as per item 1145-C of Western Trunk Line Territory Tariff 134-M Dell Rapids, S.D., Jasper, Minn., Sioux Falls and Spencer, S.D., to Flint, Mich. Proposed in cents per net ton: in open equipment, $4.96; in closed equipment, $5.96. Subject to X-175-A increases.

Docket E-41-1477 (S)—It is proposed to establish on sand, other than ground

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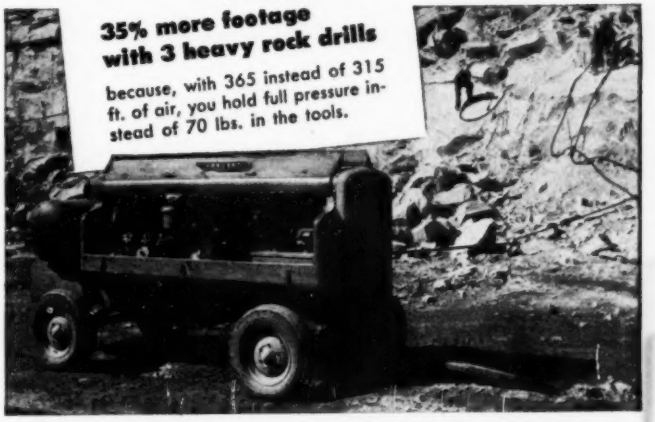
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— SPECIAL CONVEYORS BUILT TO ORDER —

CONVEYOR ENGINEERING & SUPPLIES CORP.

P.O. Box 106, Hobart Place & D.L.&W.R.R., Clifton, N. J. Phone Pa. 2-1092-J

or pulverized sand, in open equipment, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to capacity, the actual weight will apply, but in no case less than 40,000 lb. from McCormick, Ill., to Racine, Wis., 189 cents per net ton, subject to X-175-A increase.

FREIGHT TRAFFIC COMMITTEE-TRUNK LINE TERRITORY RAILROADS

Docket bulletin FTC 423 September 21 TL M-1662 (Shipper)—Crushed stone, in open-top cars, not protected by tarpaulin or other protective covering, carload minimum weight 90 percent of marked capacity of car, from Stafford, N.Y., to Arkport and Hornell, N.Y., $1.50 per net ton, subject to ExParte 175 increase.

Docket TL M-1672 (Shipper)—Crushed stone in open cars, not protected by tarpaulin or other protective covering, carload minimum weight 90 percent of marked capacity of car from Lacona, N.Y., to Cato, N.Y., $1.28 per net ton, subject to ExParte 175 increase.

Docket TL M-1698 (Shipper)—Limestone, crude, fluxing, foundry, or furnace, when loaded in open-top equipment, carload minimum weight 90 percent of marked capacity of cars, from Inwood, W.Va., to Baltimore and Sparrows Point, Md., $1.85 per gross ton, subject to Ex-Parte 175 increase.

Docket TL M-1712 (Shipper)—Proposed to establish on stone, crushed, and screenings, in straight or mixed carloads, in bulk, in open-top cars, to be issued to meet motor truck competition, minimum weight 90 percent of marked capacity of car, to Pemberton, N.J., from Kingston, N.J., $1.19 per net ton; Monocacy, Pa., $1.32 net ton; and Lambertville, N.J., $1.07 per net ton, subject to ExParte 175 increase. There rates will not include agricultural limestone, unburned, fluxing stone, or firestone, or stone coated with oil, tar, asphaltum or similar bituminous materials.

Canada Crushed & Cut Stone Has Prosperous Five Months

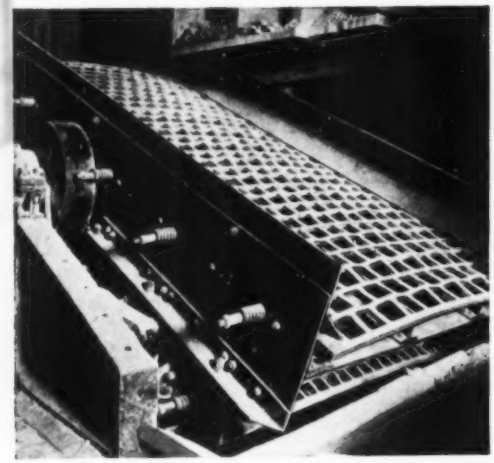
R. G. L. Harstone, president, Canada Crushed and Cut Stone, Ltd. (formerly Canada Crushed Stone, Ltd.), announced that the earnings of the company for the five-month period, since 1951, are satisfactory.

The gross profit, after deducting bond and debenture interest accruing to date, September 30, amounts to $477,392.55.

Prospects for the profitable operation of all plants and quarries, for the remainder of the company fiscal year are excellent, Mr. Harstone stated.

The Standard Oil Company of Whiting, Ind., is preparing the building site for a new sulphur plant to be constructed at Whiting, a project which is expected to be completed and ready for operation in 1952. It is reported that the 55 tons of elemental sulphur of 99.9 percent purity will be produced at the plant daily.

Outstanding Advantages of Hendrick Perforated Plate



for vibrating and shaking screens

- It maintains uniformity of mesh throughout an unusually long service life.
- It can be supplied with any desired shape and size of perforations.
- It can be made — either flat or corrugated — in any required gauge in tank, high carbon, high tensile, and abrasive-resisting steels.
- For screening highly abrasive materials, it is heat-treated to increase its toughness.
- Its full clearance practically obviates clogging.
- The ease with which decks can be changed cuts labor costs.

1876 — Seventy-Fifth Anniversary — 1951

SEE OUR CATALOG IN SWEET'S

HENDRICK

Manufacturing Company

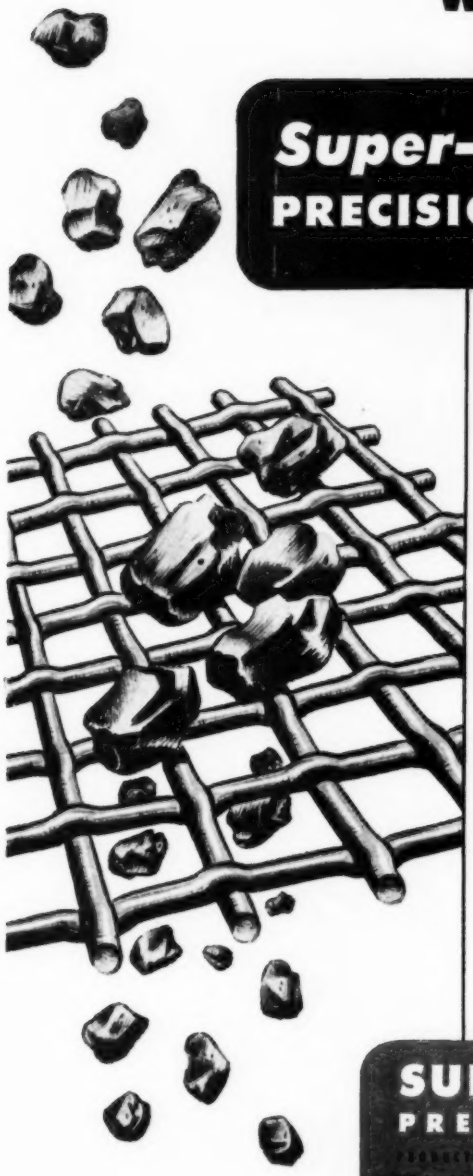
39 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
Shur-Site Treads, Armorgrids

Write for copy of Hendrick Perforated Plate Catalogue

STEP UP PRODUCTION SCHEDULES WITH



Super-Tempered PRECISION SCREENS

Today's intensified production puts extra strain on equipment...makes doubly important the long-wearing qualities you get from Super-Tempered Precision Screens.

More and more, users are discovering that the extra durability and sustained reliability of Super-Tempered Screens offset by far their slightly higher first cost.

There are two good reasons why Super-Tempered Precision Screens give long-lasting resistance to abrasion and fatigue... stay tight under the most punishing vibration. First: because they're made of a special, tough super-tempered steel rolled and heat-treated in our own plants. Second: because they're crimped and woven on powerful hydraulic machines of our own exclusive design.

Find out how Super-Tempered Precision Screens can pay off for you in less downtime; longer, more accurate and dependable service; greater tonnage output at lower cost.

For additional information write or phone our nearest sales office.

THE COLORADO FUEL & IRON CORPORATION, Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION, Oakland, California
WICKWIRE SPENCER STEEL DIVISION, Atlanta • Boston • Buffalo • Chicago
Detroit • New York • Philadelphia

SUPER-TEMPERED PRECISION SCREENS CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

with Segmental Kiln Ends Cast in Thermalloy

These segmental kiln ends designed by Electro-Alloys will lengthen kiln life, reduce downtime, and greatly speed replacement. Records show kiln ends lasting as long as 15 years, thanks to the protection against warping provided by these heavy-duty Thermalloy ends.

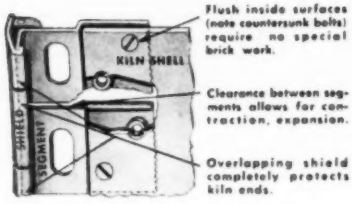
INSTALLATION IS EASIER because there's no special brick work needed. Segments are fastened with bolts countersunk on the inside of the kiln, eliminating any need for special brick work and providing a perfectly flush surface for the brick lining.

WARPING IS GREATLY REDUCED because, (1) segmental design allows for expansion and contraction without permanent set of the kiln shell, and (2) segments completely shield kiln ends from clinker and flame leakage to a depth of 16½" back from the mouth of the kiln. Yet you don't shorten the effective operating length of the kiln.

ONE-MAN REPLACEMENT is made possible with segmental design; the maximum weight to be handled at any one time is 35 lbs. Shield segments—which bear the brunt of flame leakage and clinker abrasion—can be removed by simply knocking out the pins which secure them, and replacing with new shield.

LENGTHEN SERVICE LIFE OF YOUR KILN next time you're replacing or installing a kiln end—let one of our engineers show you how we can lengthen its life for you. Simply write Electro-Alloys Division, 2136 Taylor St., Elyria, Ohio.

VIEW FROM INSIDE KILN


KILN SHELL
SHIELD SEGMENT
Flush inside surfaces (note countersunk bolts) require no special brick work.
Clearance between segments allows for contraction, expansion.
Overlapping shield completely protects kiln ends.

Kiln is protected by high heat resistant Thermalloy, to distance of 16½" back from mouth.

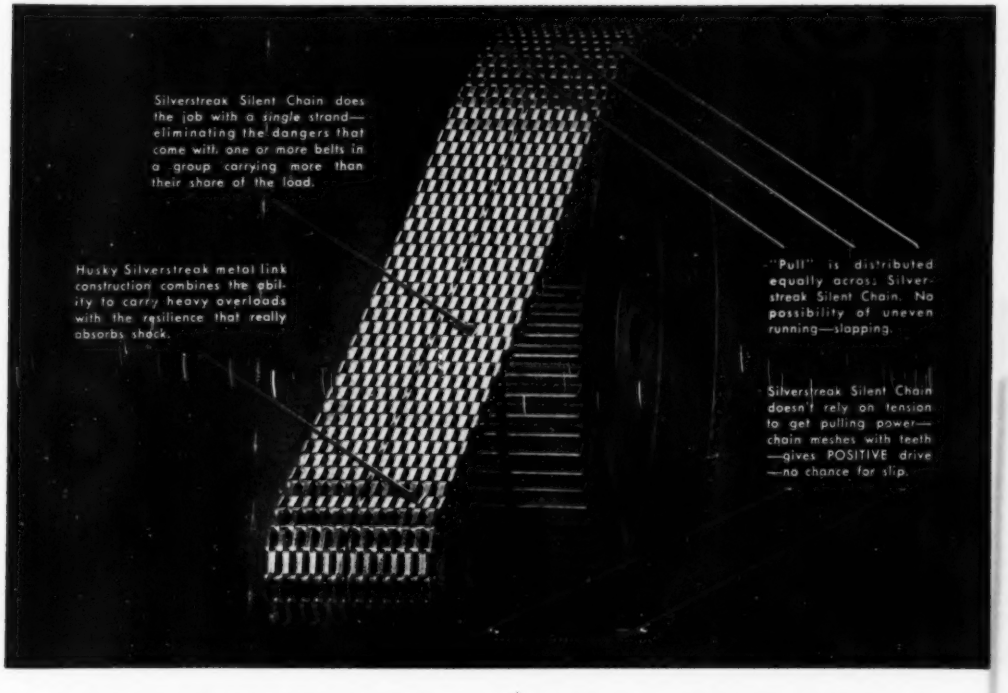
Shield casting protects kiln end from abrasion by clinker. Easily replaced by knocking out pins.

*T. M. Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

Get full rpm transmission...


Silverstreak Silent Chain does the job with a single strand—eliminating the dangers that come with one or more belts in a group carrying more than their share of the load.
Husky Silverstreak metal link construction combines the ability to carry heavy overloads with the resilience that really absorbs shock.
"Pull" is distributed equally across Silverstreak Silent Chain. No possibility of uneven running—slapping.
Silverstreak Silent Chain doesn't rely on tension to get pulling power—chain meshes with teeth—gives POSITIVE drive—no chance for slip.

LINK-BELT Silverstreak Silent Chain Drives

Slip-proof Slap-proof Shock-proof

TAKE the proven road to increased production — through the best in high-speed power transmission. You'll find Link-Belt Silverstreak Silent Chain Drives are 98.2% efficient. With normal maintenance, you have a *positive* drive that runs for years and years.

And note this important point — on extremely short centers Silverstreaks lose none of their efficiency. What's more, reduction ratios as high as 10-to-1 are frequently used. Both of these Silverstreak features save you valuable space.

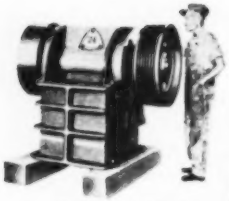
One test will prove to you why thousands of production-minded engineers have standardized on Link-Belt Silverstreak Silent Chain Drives.

LINK-BELT

12,200

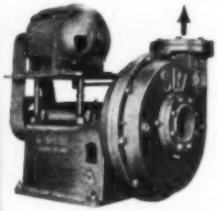
SILVERSTREAK SILENT CHAIN DRIVES

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities.



Denver Forced Feed Jaw Crusher

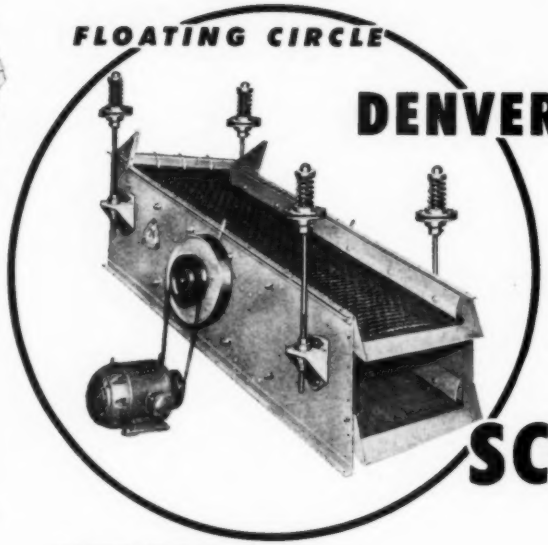
Denver Vertical Sand Pump



Denver SRL "Rubber Lined" Sand Pump

Denver Adjustable Stroke Diaphragm Pump

FLOATING CIRCLE



DENVER-DILLON VIBRATING SCREENS

OPERATING DATA

Horsepower — 3 H.P. (for 4′ x 8′ Single Deck)

Shipping Weight — 1490 lbs. (4′ x 8′ single deck bare screen for domestic shipment).

Low Power Cost — Floating circle, 2-bearing action causes rapid screening; oversize actually floats over screen; power cost is reduced as much as 50%.

High Capacity — This screening action (1) gives more accurate sizing (2) eliminates dead weight; permits less bulk in screen frame (3) gives full screen area capacity.

Low Operating Cost — Rugged, simple construction results in minimum repairs and down time. Shaft and bearings support no other load. Pressure lubrication prevents entry of dirt or moisture. Tension on screen cloth is easily maintained. Rubber cushioned camber bars arch screen section; prevent whipping and lengthen life of screen cloth.

ALL SIZES

Pilot plant and mill sizes available from 1′ x 3′ to 5′ x 10′.

•

Let us quote you prices on these excellent screens. Standardization and quantity production mean low costs, good deliveries.

•

Complete ore dressing equipment from...testing...to feeder ...to dryer.

DIMENSIONS

Screen Size			*Dimensions			*Approximate Shipping Weight, Lbs.	
W	L	H.P.†	L	W	H	Domestic	Crated for Export
1′	3′	⅓	3′-2″	2′-0″	2′-4″	240	290
1′	4′	½	4′-1″	2′-0″	2′-9″	280	335
1½′	3′	½	3′-2″	2′-6″	2′-4″	275	330
1½′	4′	½	4′-1″	2′-6″	2′-9″	320	385
1½′	6′	¾	5′-11″	2′-6″	3′-6″	400	480
2′	4′	¾	4′-1″	3′-0″	2′-9″	380	455
2′	6′	1½	5′-11″	3′-0″	3′-6″	980	1175
3′	6′	2	6′-1″	4′-3″	3′-9″	1075	1290
3′	8′	2	7′-11″	4′-3″	4′-7″	1310	1570
3′	10′	2	9′-9″	4′-3″	5′-4″	1600	1920
4′	8′	3	8′-1″	5′-5″	5′-0″	1490	1790
4′	10′	3	9′-11″	5′-5″	5′-9″	1760	2110
4′	12′	3	11′-9″	5′-5″	6′-6″	2640	3170
5′	10′	5	9′-11″	6′-9″	5′-11″	2740	3290
5′	12′	5	11′9″	6′-9″	6′-9″	3015	3620

*Applies to Single Deck Screen, less drive, mounted at 22½° slope.
†Applies to Single Deck Screen.

FLOTATION ENGINEER

DENVER • NEW YORK • CHICAGO • EL PASO

TORONTO • VANCOUVER • MEXICO, D. F.

LONDON • JOHANNESBURG • RICHMOND, AUST.

"Men from that make its friends happier, healthier, and wealthier"

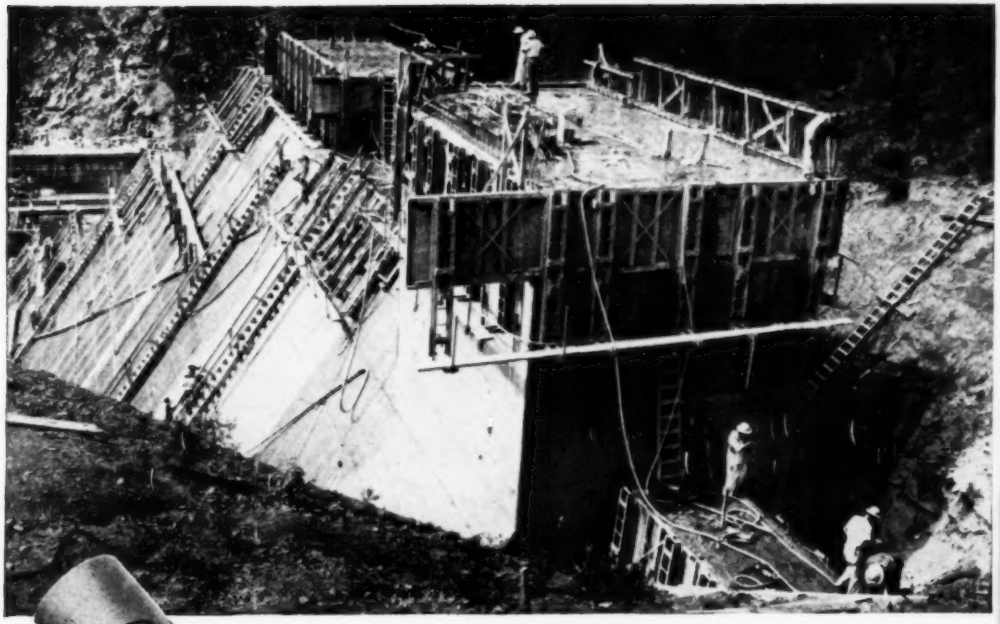
DENVER EQUIPMENT COMPANY

1400 SEVENTEENTH STREET • DENVER 17, COLORADO

SCREENS IN STOCK

Limited number of 4′ x 8′ and 3′ x 6′ single deck Denver-Dillon Vibrating Screens (bare screens) are in stock now, assembled, ready to ship. Additional deck can be added to make 2-deck screen. These screens are subject to prior sale. Phone or wire your order today.

S-5112



Philpott Dam finds solution to difficult Water and Air Hose problems

● Air and water hose, used in the Philpott Dam construction, came up against every enemy in the book. Changeable Virginia weather weakened hose resistance to high pressure loads, abrasive concrete structures clawed away hose covers, and the rocky terrain made deep, stabbing, carcass-penetrating wounds that caused sudden breakdown and work stoppage.

Ordinary hose wouldn't meet these challenges. Engineers, faced with rigid work schedules, couldn't put up with interruptions. They called in the local Republic Rubber Distributor, who, after a thorough study of all hose hazards, recommended use of Republic's Champion Air Hose and Republic's Champion Water Hose.

9,000 feet of these standard-built (not custom-made) pressure carriers went into immediate action for Philpott engineers who say Republic hose eliminated work stoppages and cut maintenance costs to absolute minimum.

Republic Rubber Products produce results like this for men in every industry. There's a complete line of Hose, Belting, Packing and Molded & Extruded Products. Just drop us a card regarding any one of these products.

CHAMPION AIR DRILL HOSE

A super service hose of braided construction on oil-resistant tube, a strong flexible carcass and shock-resisting cover.

CHAMPION WATER HOSE

Top quality hose of wrapped construction, built with specially reinforced carcass, a smooth, friction-reducing tube and a rugged outer cover that provides maximum protection against external damages.

INDUSTRIAL RUBBER PRODUCTS BY

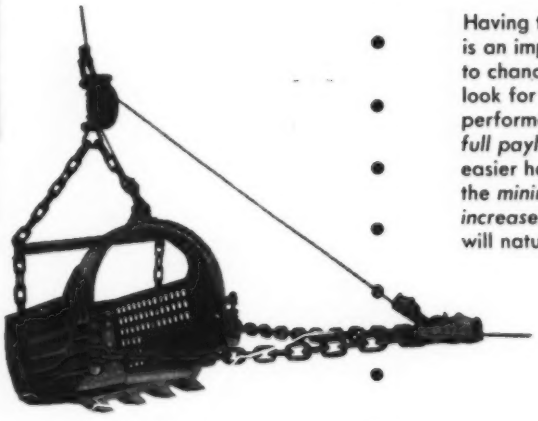
REPUBLIC RUBBER DIVISION

Lee Rubber & Tire Corporation

YOUNGSTOWN, OHIO

One way to buy a dragline bucket . . .

and the right way



Having the right dragline bucket for the job is an important decision that should not be left to chance. In choosing your next dragline bucket look for *strength and durability* for long-lasting performance. Choose the bucket that gives you *full payloads everytime* with perfect balance for easier handling. Choose the bucket that requires the *minimum of maintenance* and offers *increased profits* on every job! Your choice will naturally be a HENDRIX DRAGLINE BUCKET!

3/8 to 40 Cubic Yards

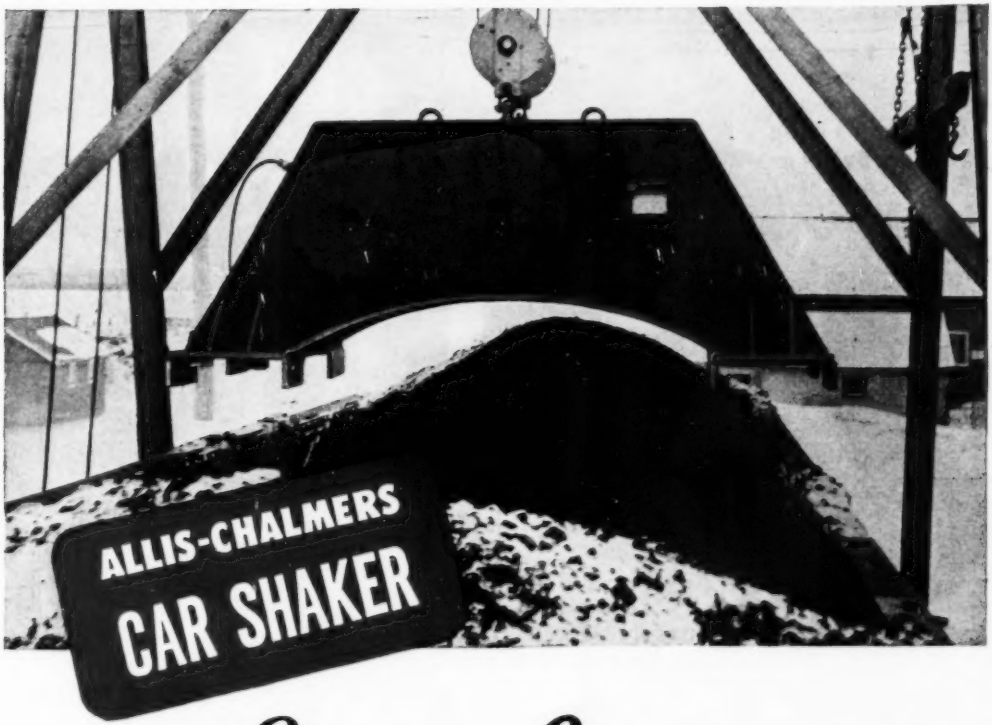
Hendrix Buckets Also Available Without Perforations On Special Order Only

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

HENDRIX MANUFACTURING CO., INC.

MANSFIELD – LOUISIANA

FAST UNLOADING



...and Sturdy Construction

BESIDES BIG SAVINGS in man-hours and demurrage costs, operators report savings in maintenance and downtime with Allis-Chalmers car shakers. And no wonder! Allis-Chalmers has designed these units for long, dependable service without trouble. For example:

- Shaker body is one-piece, all-welded structure made of 1 in. thick reinforced steel plate and stress-relieved to eliminate welding strains.
- Motor and drive are totally enclosed within shaker body, protected from weather and accidental injury. Motor is mounted in a special cradle base and protected from vibration damage with multiple shear mountings.
- Extra large bearing — 11⅞ in. outside diameter. Long bearing life! Heavy duty shaft arranged for hydraulic bearing removal.

Get more facts about how Allis-Chalmers car shakers can save money in your operations. Call the A-C representative in your area. Allis-Chalmers, Milwaukee 1, Wisconsin.

Car Shakers Promote Safety to Personnel!

ALLIS-CHALMERS

Allis-Chalmers Mfg. Co.
Milwaukee 1, Wis.

Please send my copy of Car Shaker Bulletin 07B7221A.

Name .....

Title .....

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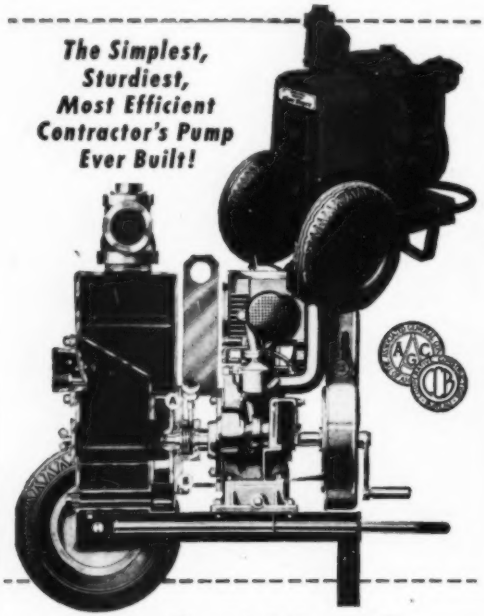
City ..... State .....

A-3468

Worthington's Answer To Your Toughest Pumping Problems...

The Simplest, Sturdiest, Most Efficient Contractor's Pump Ever Built!



Impeller (A) and shaft seal (B) — the only moving parts

Only two moving parts in a Worthington Blue Brute Self-Priming Centrifugal! And no ports, jets or valves to clog up. Instead, positive self-priming results from expert application of basic hydraulic principles — a Worthington specialty for over 100 years.

Materials are *right* — in the right places. Impeller and renewable wear plates are of special abrasive-resisting alloy . . . the dual shaft seal is fully enclosed and self-adjusting . . . the steel alloy casing defies rust, erosion and hard knocks . . . the air-cooled engine is easy-starting. So, with all trouble-making gadgets left out, this Blue Brute Portable has absolutely everything you want for fast, dependable pickup, plenty of reserve power — and next to no maintenance!

See your nearby Worthington Distributor for the A. G. C.-rated sizes, base-mounted or with steel or pneumatic-tired wheels.

WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION
Construction Equipment Sales Division
Dunellen, New Jersey
Distributors In All Principal Cities
IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB HI-2

CUT BAG PACKING COSTS

AUGER-MATIC Bag Packer

Quickly fills self-closing bags to the desired weight. Saves time in filling and eliminates need for sewing or other expensive bag closing equipment.

The AUGER-MATIC Bag Packer has a multi-twist auger which can quickly be changed to pack any material from powder to pellets.

AUGER-MATIC Packing reduces dirt and waste . . . a time and labor saver. Packer can easily be moved from one filling point to another.

Send for descriptive literature.

E. D. CODDINGTON MFG. CO.
7074 NORTH 37TH STREET • MILWAUKEE 9, WISCONSIN

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT & QUARRY

December 1951

Houchins Manufacturing Company, Inc.

Manufacturers of

HOUCHINS BLOCKS

CARY B. HOUCHINS
President & General Manager

Mailing Address
107 Maple Avenue
BECKLEY, WEST VIRGINIA

CARY D. HOUCHINS
Vice President & Asst. Mgr.

PLANT, SKELTON, W. VA.

DIAL 5200

September 24, 1951

Stearns Manufacturing Company
Adrian, Michigan

Gentlemen:

Since the start of our operations in May, 1948, the story of Houchins Blocks has been one of continued expansion.

We built our original plant around a Stearns No. 7 Joltcrete machine, which produced as high as 3,000 blocks per 8-hour shift and gained for us the reputation of Houchins Blocks being the best block in our area. In 1947 we installed a Stearns No. 9 Joltcrete in our plant and were so pleased with its record of production and maintenance that a second No. 9 was purchased in 1949, to replace the No. 7 machine.

We attribute our success to these great machines in their production of the highest quality blocks to be found in southern West Virginia.

We are equipped with Stearns machinery throughout our plant, and we can recommend your service and machinery very highly.

Yours very truly,
Houchins Mfg. Co. Inc.

Cary Houchins, Pres.

CBH:brg

In just three years...

From One No. 7 to Two High Production No. 9 STEARNS JOLTCRETES!

All-Stearns plant produces "the highest quality blocks in southern West Virginia."

One of two No. 9 Joltcretes now in the Houchins plant. *Super Production*—Makes nine to 11 eight-inch blocks per minute. *Lowest First Cost*, including cored pallets, of any comparable machine. *Low Replacement Cost*—Few working parts, few wearing parts. *Cuts Production Costs*—Adds to profit margin. *Dual-Shaft Vibration*—Insures uniform and consistent performance.

← Houchins' plant and yard cover two acres. Besides the two Joltcretes, the company has two Stearns Skips, two Stearns Mixers and the Stearns Yard Hoist, shown here. President and General Manager of the rapidly expanding Houchins Manufacturing Company is Cary Houchins. Lowell Cawley is Sales Manager.

MODERNIZE WITH A STEARNS! BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW!

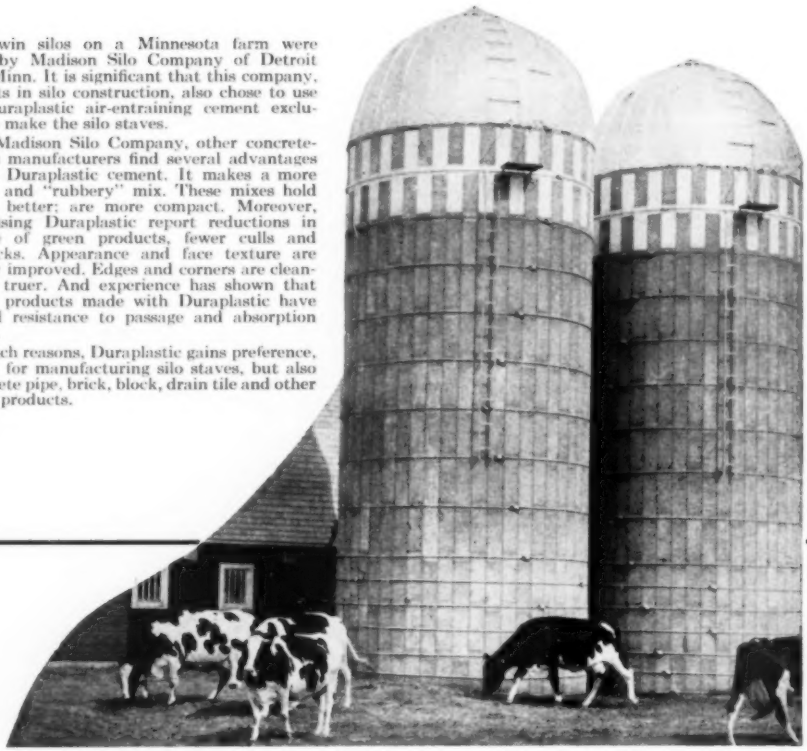
STEARNS

MANUFACTURING COMPANY · INC

ADRIAN • MICHIGAN

STEARNS 15 STEARNS 50 ZIPPERS JOLTCRETES MIXERS SKIP LOADERS TURNTABLES SINTERLITE

For silo staves . . . and other concrete products . . . DURAPLASTIC offers several advantages



These twin silos on a Minnesota farm were erected by Madison Silo Company of Detroit Lakes, Minn. It is significant that this company, specialists in silo construction, also chose to use Atlas Duraplastic air-entraining cement exclusively to make the silo staves.

Like Madison Silo Company, other concrete-products manufacturers find several advantages in using Duraplastic cement. It makes a more cohesive and "rubbery" mix. These mixes hold together better; are more compact. Moreover, plants using Duraplastic report reductions in breakage of green products, fewer culls and throwbacks. Appearance and face texture are generally improved. Edges and corners are clean-cut and truer. And experience has shown that concrete products made with Duraplastic have increased resistance to passage and absorption of water.

For such reasons, Duraplastic gains preference, not only for manufacturing silo staves, but also for concrete pipe, brick, block, drain tile and other concrete products.

YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company

PQ-D-132

ATLAS® **DURAPLASTIC**

AIR-ENTRAINING PORTLAND CEMENT

Makes Superior Concrete Products at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

The CONCRETE MANUFACTURER

December 1951

Convention Timetable

January 16 and 17, 1952—Milwaukee. 32nd annual convention, Wisconsin Concrete Products Association. Plankinton House.

●

February 11, 1952 (week of)—Chicago. 22nd annual convention and exhibit, National Ready Mixed Concrete Association. Conrad-Hilton (formerly Stevens) Hotel.

●

February 14-16, 1952—Windsor, Ont. Third annual meeting, National Concrete Products Association (of Canada) and exhibit. Prince Edward Hotel.

●

February 18-20, 1952—New York. 32nd annual convention, National Concrete Masonry Association. Hotel New Yorker.

●

February 26-28, 1952—Cincinnati. 48th annual convention, American Concrete Institute. Netherland Plaza Hotel.

●

February 27 and 28, 1952—Chicago. Third annual convention and meeting, American Concrete Pressure Pipe Association. Drake Hotel.

●

February 28-March 1, 1952—Chicago. 44th annual convention and meeting, American Concrete Pipe Association. Drake Hotel.

●

March 3-5, 1952—Denver. Second convention and meeting, American Concrete Agricultural Pipe Association. The Brown Palace Hotel.

WHY ATTEND CONVENTIONS?

ABOUT this time of the year we invariably sound the rallying call for a series of convention gatherings which are of direct interest to readers of THE CONCRETE MANUFACTURER. To borrow a phrase from Abe Lincoln, "it is altogether fitting and proper that we should do this". We have an interest in convention proceedings at least as great as that of any of the full-fledged producer-members of the various trade associations which we cover, and for obvious reasons we find it necessary to pay much closer attention to the programs and discussions than even the most zealous of the active participants.

For this reason, and also because we are required in the line of duty to attend many more such gatherings than most of our readers, we think our slant on the pros and cons of convention attendance might almost be regarded as expert opinion. In a sense we are a captive audience; we *have* to attend whether we want to or not. It would be entirely in keeping with perverse human nature, then, if we in particular were to approach the convention season in the rebellious mood of the galley slave.

Actually, we have never set off for a convention in any mood but one of pleasant expectancy, nor come away from one without a deep conviction that the going was well worth the time, trouble and expense. Since convention programs are by no means uniformly inspiring, informative, or entertaining, we judge that our response has relatively little to do with what takes place in the meeting rooms.

We think it comes rather from an aspect of trade association activity which has received all too little attention. With few exceptions the organized activities of our over-organized species have a tendency, no matter from what premise they spring, to accent the ways in which particular groups of individuals differ from other groups. In this fashion we are set apart, and in some measure alienated, from our fellow men in accordance with such accidents of heritage as our nationalities, religious affiliations, and political persuasions.

Trade associations, or at least those with which we are familiar, have precisely the opposite effect. By their very nature they cut across the artificial barriers, drawing their memberships from all racial, political, religious and economic groups. Thus their annual gatherings, dedicated though they are to the discussion of problems and experiences peculiar to particular industries, unfailingly provide an opportunity for men of many persuasions to discover and explore much larger areas of mutual interest and need which they share with their fellow men.

If our readers feel, as we do, that the pressure of modern living provides all too few opportunities for the furtherance of true fellowship and understanding, we urge them to take part in the forthcoming conventions of their industries. We believe the effort will be well rewarded.

William M. Avery

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news of the concrete industries

Technical Conference Held By Products Association Of Missouri and Kansas

More than fifty members and guests of the Missouri-Kansas Concrete Products Association attended a one-day technical conference and dinner on October 1 at the Hotel President in Kansas City, Mo.

George W. Goelitzer, president of the Missouri-Kansas association, presided at the evening session, while Carl A. Menzel, Chicago, manager of the housing and cement products bureau of the Portland Cement Association, and Earl W. Peterson, Ideal Cement Stone Company, Omaha, Neb., spoke during the afternoon session. R. E. Copeland, Chicago, director of engineering for the National Concrete Masonry Association, was the speaker at the dinner. He discussed *Manufacturing Problems of the Concrete Masonry Industry.*

A forum discussion followed Mr. Menzel's address, with George W. Kulhavy, Carter-Waters Corporation, Kansas City, Mo., presiding. Between the two afternoon addresses, M. N. Penney, Ready-Mixed Concrete Company, Lawrence, Kans., showed color slides of the recent flood.

New Jersey Firm to Open Products Plant in Houston

Miracle Block Corporation, a Delaware corporation operating under a New Jersey franchise, has purchased property at 4009 Hempstead Road, Houston, Tex., including three metal frame buildings and an air-conditioned office building, for $105,000.

The firm will recondition the buildings at a cost of $30,000 and will install $75,000 worth of machinery, including a kiln, for the manufacture of concrete tile and block with terrazzo facings.

Canadian Products Assn. To Hold Meeting and Show

According to an announcement issued by R. Davidson, secretary of the National Concrete Products Association (of Canada), this organization will hold its third annual convention at the Prince Edward Hotel, Windsor, Ontario, on February 14, 15, and 16, 1952.

In addition to a program of addresses by notable speakers, there will be an exhibit of the latest items used in the concrete industries. The show will be housed in the Armouries at Windsor, near the Detroit tunnel. It is hoped that many manufacturers from the United States will attend the convention and the exhibit, since Windsor is centrally and conveniently located. Moreover, the officers have expressed the hope that American manufacturers will also display their products in the show.

Thomas K. Breitfuss Joins American Concrete Pipe Assn.

Thomas K. Breitfuss has joined the American Concrete Pipe Association, Chicago, as assistant to Howard F. Peckworth, managing director.

Mr. Breitfuss received his B.S. degree in civil engineering at Northwestern University Technological Institute in 1949. He attended the University of California at Los Angeles, the New Mexico College of Agriculture and Mechanical Arts, and Biarritz American University of France.

He was formerly employed by the Ragnar Benson Construction Company of Chicago and the Chicago Pump Company.

Thomas K. Breitfuss

Prestressed Concrete Blocks Form 30-Ft. Bridge Beams

Unavailability of steel beams for a proposed bridge at Hillsboro, Ill., led to the decision of the county highway department to use concrete beams, made of prestressed blocks. The 30-ft. beams, each of which weighs a ton, contain two end blocks, two narrow guide blocks, and 42 beam blocks. Held together by mortar and a tough ⅜-in. steel five-strand cable, the beam is placed under pressure of 30,000 p.s.i. before curing. After three days hydraulic pressure is applied for the second time, until the 135,000-p.s.i. point is reached.

Since the beams are wider at the bottom than at the top, concrete will be poured between them after they have been laid side by side. Steel cables will also be strung across the beams for transverse pressure. It is estimated that the life of this bridge will be about 50 years, depending upon the life of the wooden piling upon which it is laid.

Employing the prestressed block-built beams was an idea developed by the engineering firm of Bryan and Dozier of Nashville, Tenn. Hurst-Rosche, Inc., engineers, of Hillsboro, will have the development and design rights for Illinois and Indiana. According to press reports, this bridge is the first of its type ever laid in the Midwest.

Ciney E. Tarpley, operator of the C. E. Tarpley & Sons Concrete Works at Olney, Ill., died on September 29 as the result of accidental asphyxiation in his home.

Roy E. Cox and R. L. Gallagher have been named to new posts in the Texcrete Company of Dallas, Tex. Mr. Cox is now city salesman for Texcrete. He has been with the firm for the last year. Mr. Gallagher, a graduate of Penn State, will replace Mr. Cox in his former duties as layout man and estimator.

Ira E. Newcomer, 71, an auditor for the Dallas Concrete Company, Dallas, Tex., died at a hospital in that city on July 31 after a brief illness. He had been associated with the concrete company since 1929.

• One of our roving field editors was in Columbia, S. C., during the State Fair several weeks ago, and took the above picture of Palmetto Quarries Company's permanent exhibit of concrete products. The attractive display includes a number of walls built of various types of masonry units, and a complete concrete floor (right foreground) built of Cuban tile supported on precast concrete joists.

20,000 Cu. Yd. of Featherlite Going into Dallas Skyscraper

Featured in the third issue of *Featherlite Facts*, published by the Featherlite Corporation of Dallas, Tex., is an artist's sketch of the proposed Dallas Republic National Bank Building, a skyscraper scheduled for completion in 1953 in which more than 20,000 cu. yd. of Featherlite expanded shale aggregate is being used for structural concrete and concrete fill.

Featherlite Facts is a pictorial bulletin giving data on the firm's products and on equipment used in construction which employs the aggregate. Photographs, tables, and sketches point up the outstanding qualities of this lightweight product.

X-Ray Used to Study Cement, Improve Concrete Mixtures

The Waterways Experiment Station of the Corps of Engineers, U. S. Army, has recently added to the facilities at its Concrete Research Division, Jackson, Miss., what is believed to be the first X-ray diffraction apparatus ever to be installed in the state of Mississippi. The apparatus will be employed in studies of cement, admixtures, aggregates, and other materials being investigated for use in the Corps of Engineers Civil Works Program.

The installation at the Waterways Experiment Station includes all the facilities needed to prepare photographic records. One valuable characteristic of the apparatus is the fact that very small samples weighing only a few hundred-thousandths of an ounce are used to obtain the diffraction data. This fact will permit the selection of tiny portions of very fine-grained materials such as admixtures for concrete, cements, hydrated cements, and clays for study. Some of these materials cannot be satisfactorily studied and identified by microscopic or chemical methods.

The principal studies in which the apparatus will be initially employed are investigations for the Office, Chief of Engineers, designed to develop data to increase the quality and reduce the cost of concrete used in the Civil Works program.

3 Winners Announced In 1950-51 Safety Contest Of Ready-Mix Plants

A last-minute communication from Vincent P. Ahearn, executive secretary of the National Ready Mixed Concrete Association, contained the following information on prize-winning operations in the safety competition of the latest association, which ended on July 1, 1951. They are as follows:

Class A—plants producing more than 100,000 cu. yd. of concrete during the 12-month period—W. E. Anderson Sons Co., 560 Harmon Ave., Columbus, O.

Class B—plants producing 50,000 to 100,000 cu. yd.—Eugene Sand and Gravel Company, P. O. Box 1067, Eugene, Ore. This plant produced 84,529 cu. yd. of concrete, worked 78,039 man-hours, had no injuries to personnel or non-employees, and had no property damage accidents.

Class C—plants producing under 50,000 cu. yd. of concrete—Standard Roofing and Material Company, 1742 E. Sixth Street, Tulsa, Okla. This firm produced 48,193 cu. yd. of concrete, worked 46,904 man-hours, and also had an accident-free record, with no injuries to personnel or to non-employees and no property damage accidents.

Trophies will be presented to the winning companies by PIT AND QUARRY at the annual convention in February.

El Paso Concrete Products & Lumber Company, 615 Chelsea Drive, El Paso, Tex., has opened a second place of business at 5653 Alameda Avenue, in Ascarato, Tex. J. G. Valdes and Babil Arrieta are the owners.

• This poster (right) from the National Concrete Masonry Association calls attention to a critical industrial situation—the current scrap shortage. According to N.C.M.A. spokesmen, the shortage has reached emergency proportions. Key men in the concrete industry are urgently requested to conduct scrap salvage programs, since the supply of heavy industrial scrap is falling far short of meeting the requirements of steadily increasing steel production. Even now the concrete masonry industry is experiencing the effects of this steel shortage. Each firm is urged to co-operate in a scrap drive by displaying this poster (available from N.C.M.A. headquarters) and by disposing of all scrap.

Sub-Committee of C-13 Discusses Pipe Problems At Chicago Meetings

Members of the sub-committee of Committee C-13 (Concrete Pipe), American Society for Testing Materials, met at the Ambassador East Hotel, Chicago, on October 14 and 15, 1951, to prepare a draft of a low-head reinforced concrete pressure pipe specification. The group includes the following: Chairman Howard G. Curtis, U. S. Department of the Interior, Bureau of Reclamation, Denver, Colo.; Samuel A. Greeley, Greeley and Hansen, Consulting Engineers, Chicago, Ill.; M. W. Loving, consulting engineer, Glenview, Ill.; J. B. Verhoek (proxy for Mr. Greeley on October 15), also of Greeley and Hansen; Joseph A. Dunn, Hume Pipe of New England, Inc., Swampscott, Mass.; E. F. Kelley, Division of Physical Research, Bureau of Public Roads, Washington, D. C.; and Henry A. Weigand, United Concrete Pipe Corporation, Baldwin Park, Calif.

This sub-committee had met on October 12 and 13 with the sub-committee on Culvert Pipe and Drain Tile, American Association of State Highway Officials, also at the Ambassador East. Howard F. Peckworth, managing director, American Concrete Pipe Association, Chicago, and members of his staff recorded the minutes of these meetings. A report of discussions and actions of the subcommittees will be presented to Committee C-13 at its next meeting.

• The sub-committee of C-13 on low-head reinforced concrete pressure pipe specification: H. G. Curtis (chairman), M. W. Loving, J. B. Verhoek, J. A. Dunn, E. F. Kelley, and H. A. Weigand.

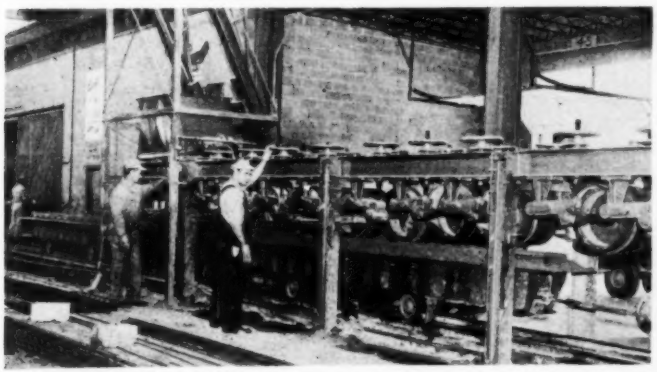
Fort Wayne Plant Producing Lith-I-Bar Joists on Big Unit

Manufacture of steel-reinforced concrete joists is now under way at the Masolite Division of the General Dredging Company, Inc., at Fort Wayne, Ind., according to Ralph W. Walb, president.

By means of its new 40-ft. long Lith-I-Bar machine, a two-rail track 120 ft. long, and a 40-ft. table which rides on the track, joists which are also 40 ft. in length can be turned out. The form on the table is partially filled with concrete as it is pulled through the machine. At the other end a truss of four 40-ft. steel bars is introduced in the wet concrete. The table travels back through the machine, and this time the hopper fills the form to the top, while rollers exert heavy pressure on the concrete. At the end of the machine a crane lifts the finished joist to a 40-ft. table, where the final mortising is done. The curing and drying period follows.

Manufactured by the Lith-I-Bar Corporation of Holland, Mich., these machines will make joists in 8-, 10-, 12-, and 14-in. depths. Shorter lengths are produced by placing a stop at the desired length. In addition, modified joists called "Joistile" can be made on the unit. These are used mainly for warehouses, factories, and other commercial buildings.

Lith-I-Bars are not available in open stock; every job is custom built, Mr. Walb stated. General Dredging Company will distribute the joists within a 150-mile radius of Fort Wayne. Special operations of the Masolite Division have been moved from the main building of the plant to a new structure; and the new joist operation is housed in the larger main building to accommodate the big machine.



• The 40-ft. machine, which makes steel-reinforced concrete joists at the Masolite Division's plant, Fort Wayne, Ind.

Charles French Jr. Accepts Post with Cleveland Builders

Charles French Jr., assistant engineer of the National Concrete Masonry Association since May, 1950, has accepted a new position with the Cleveland Builders Supply Company of Cleveland, O.

During his association with N.C.M.A. Mr. French was actively engaged in the technical problems of the concrete masonry industry. Under the guidance of R. E. Copeland, N.C.M.A.'s director of engineering, he has prepared a number of constructions and designs, some of which have appeared in technical reports. Others will be released later.

At the last annual N.C.M.A. convention in Cleveland he presented a paper on *Some Applications of Reinforced Concrete Masonry.*

Pipe Associations Announce Meetings in Chicago, Denver

Dates for three important conventions have been announced by Howard F. Peckworth, managing director of Concrete Pipe Associations, Inc.

On February 27 and 28, 1952, the American Concrete Pressure Pipe Association will hold its third annual convention and meeting at the Drake Hotel in Chicago.

This meeting will partly overlap the 44th annual convention and meeting of the American Concrete Pipe Association, scheduled for February 28 and 29 and March 1 at the Drake Hotel.

Denver's Brown Palace Hotel will be the meeting place for the second annual convention of the American Concrete Agricultural Pipe Association, which will be held on March 3, 4, and 5.

On October 8 and 9 the Southeastern Concrete Pipe Association held its fall meeting in Knoxville, Tenn. Attendance was over 100, the largest of any meeting held to date. Those attending heard Dean Nathan Dougherty of the College of Engineering, University of Tennessee, who gave the feature address.

Terry Carpenter, Inc.— Modern Multiple Industry Of Scottsbluff, Neb.

• Terry Carpenter, versatile founder and owner of the Carpenter enterprises in Scottsbluff, Neb.

By WALTER E. TRAUFFER

another ON THE SPOT moment

IN traveling about this country one occasionally encounters a success story which makes it obvious that America is still the land of opportunity and that Horace Greeley's advice, "Go West, young man," is still sound.

An outstanding example is Terry Carpenter, an aggressive and progressive citizen of Scottsbluff, Neb., who in recent years has done more things well than most men do in a lifetime. During this period he has been in the oil, filling station, sand-and-gravel, concrete block and brick, grocery, liquor, and other businesses, most of them at the same time.

Scottsbluff is a thriving community of 17,000 population, located on the North Platte River about 20 miles east of the Wyoming state line and about midway of the state north and south. Until recent years this was primarily cattle country, but irrigation has brought agriculture; and Scottsbluff is now the center of a thriving farming area. It was this sound growth and the promising future of the area which encouraged Mr. Carpenter to invest large sums in sand-and-gravel, ready-mixed concrete and concrete block plants which would have done justice to a much larger community. The products are as good as the plants, and a surprisingly large and steady demand for them has developed in and around Scottsbluff.

We know very little of the personal history of Terry Carpenter up to 1945. In 1933 and 1934 he was a member of the House of Representatives in Washington. In 1936 he was Democratic nominee for senator and in 1940 for governor. In 1945 he was the mayor of Scottsbluff. Mr. Carpenter had built up a profitable oil refining and distributing business in Scottsbluff which he sold before serving for three years in the army air force during World War II. After the war he tried living a life of leisure, but found it too dull. In 1945 he bought an 80-acre property just outside the south city limits of Scottsbluff for $15,000 and started producing sand and gravel on a small scale from an old plant on the property which was worth $10,000 alone.

This business prospered, and early in 1946 he replaced this operation with a modern 100-cu. yd. per hr. all-steel sand-and-gravel plant, complete with hydraulic dredge. He added equally modern ready-mixed concrete and concrete block and brick plants, the latter with high-pressure curing kilns. This entire installation is reported to have cost $750,000.

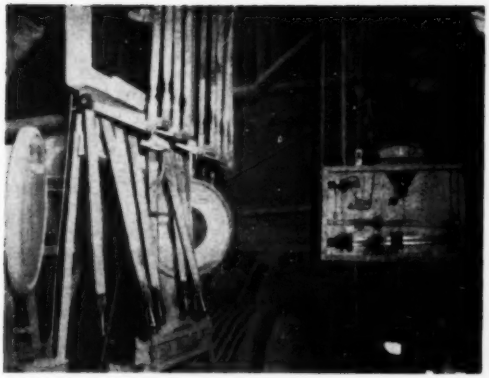
Late in 1947 Mr. Carpenter bought an additional 600 acres of adjoining property, some of which he subdivided and developed. Since then he has built a modern 630-speaker drive-in theater, a liquor store, and a modern service station, all of concrete block. He also erected at a choice location twelve four-unit apartment buildings and 20 two-bedroom houses, all of concrete brick, which he rents out. He has also built and sold or leased other buildings on the 4,000-ft. frontage of this property on a main highway leading out of Scottsbluff. In a suburban business section of the city he operates a supermarket which compares favorably with those in any other area. This store is also built of concrete block and brick. In 1948 the village of Terrytown was legally incorporated and it has its own mayor, city council, etc.

All this development has increased the value of the property as is evident from the following. In 1948 he sold 15 lots 225 ft. deep fronting on the highway for $50 per front foot. Late in 1950 others sold at $100 per front foot. The planned widening of this highway to four lanes is expected to increase the value of the property still more.

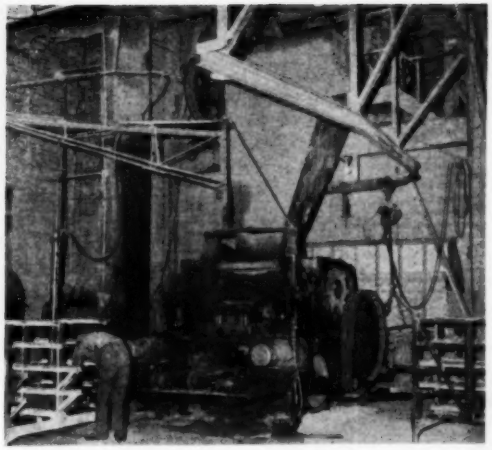
The catch to this story is that the original property, when bought by Mr. Carpenter, was low land needing filling in before it could be used

• Below, left: A general view of the Carpenter block and ready-mix plants, with the gravel plant in the background.

• Below, right: Six sizes of aggregates are stored in stockpiles over a reclaiming tunnel.

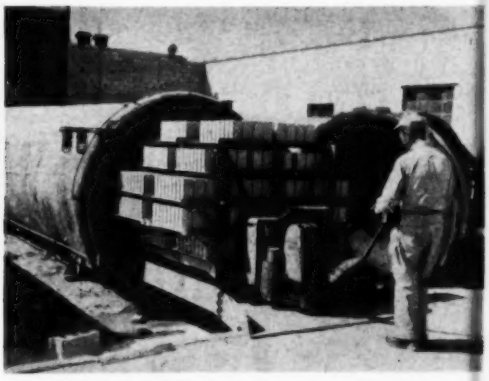


• Scene on the batch floor of the block plant, showing the mixer, admixture dispenser, and scales (left), and the water batcher scale (right).



• The Block machine, with mixer above. At the right is the hoist and the monorail for handling pallets.

• Below: Electric lift trucks are used for hauling away blocks. Note the arrangement of blocks on the rack to fit into the circular kiln.



• The automatic lift truck removing a load of cured tile from the kiln.

• A closeup of a special sheet-metal pallet on which bricks are cubed.

• Concrete bricks from the conveyor at the right being palletized.

• Cubed brick ready for shipment. Each carton bears the statement, "Sanforized Concrete Brick—Pre-Shrunk—No Cracked Walls."

for building purposes. The deposit, with about enough material in it for 5 to 6 years' operation of the gravel plant, also contained about 30 percent of unusable fines and numerous clay pockets. With a hydraulic dredge a pond 50 ft. deep was developed and the waste sand and clay was pumped through a pipe line to fill in the low spots near the highway. Any other method of filling in could have been used only at prohibitive expense. The filled in area is now valuable industrial property, and the dredge pond will become a lake which can be used for commercial and recreational purposes.

All the plants operate six days a week, but the sand-and-gravel plant produced aggregates only about four hours daily to meet the needs of the ready-mix and products plant, pumping material for fill the rest of the time. Only about 100 tons of sand and gravel were sold daily at a good price. The average output of ready-mix has been only about 30 cu. yd. daily, as the demand is sporadic. Concrete block production has averaged about 40,000 standard equivalents weekly and several million bricks are sold annually.

Before building these plants Mr. Carpenter visited many operations in different parts of this country to get ideas on design and operation. He ended by building standard plants as recommended by manufacturers, but included features often omitted by other producers for reasons of economy. In the aggregate plant, for example, great pains were taken to get accurate fractional grading and to prevent segregation in storage and handling. It has cost little more to do this, and it has paid off by making possible high-quality products and the minimum of cement requirement. In the concrete products plant high-pressure steam-curing is used, the only installation of this kind for hundreds of miles in any direction. Such kilns are not cheap; but they also have paid off in quality and in cement savings. Another feature is the use of cement-dispersing agent in all concrete.

The final step which makes the Carpenter operations outstanding is the testing laboratory, where periodic tests are made on concrete and products to insure their quality. In addition to the usual items of equipment, there is a 300,000-lb. compression testing machine used to test cylinders and finished blocks.

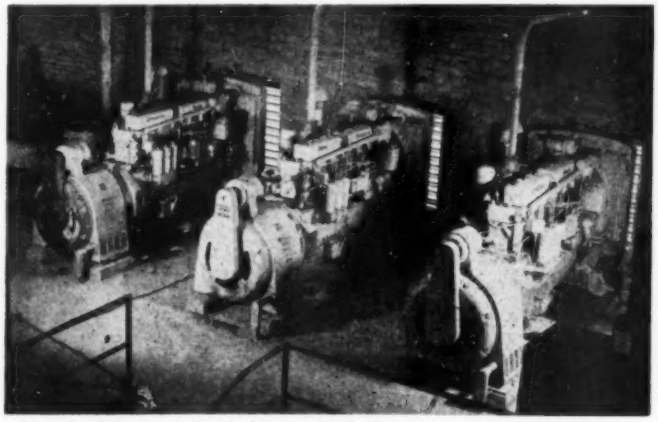
During the last winter the sand-and-gravel dredge sank. The production of sand and gravel has been discontinued and the plant has been advertised for sale. It was, however, the primary unit in this three-plant setup, and as such it is worthy of a brief description. The dredge was built by the American Manganese Steel Division of the American Brake Shoe & Foundry Company and was designed by the late Bradley Carr. It has a 10-in. Amsco centrifugal dredge pump with 12-in. suction and 10-in. discharge, which was V-belt-driven by two D13,000 Caterpillar diesel engines. A 50-ft. Eagle Swintek screen nozzle ladder, a three-drum American hoist, a priming pump, and other equipment on the dredge were driven by electric motors with power from a 75-kw. generator driven by a third D13,000 engine. This equipment was mounted on a 26- by 126-ft. steel hull with a steel Quonset hut inclosure. The sand and gravel was delivered to the shore washing and screening plant through 10-in. Naylor spiral pipe, distances ranging up to 1,500 ft. Material for fill was pumped up to 2,000 ft.

This plant was supplied by the Iowa Manufacturing Company. Four sizes of gravel and two sizes of sand are usually made. Material from the dredge goes first to a stationary scalping screen. From this point some of the excess sand is diverted for fill or to piles from which it can later be reclaimed if desired. Oversize from the screen goes to a rotary scrubber screen with ¼-in. openings and thence to a pair of three-deck vibrating screens. Their oversize (1½- to about 5-in.) goes to a Kubit impact pulverizer, and the 1½-in. product goes by conveyor back to the screens in closed circuit.

Overs from the two lower decks of these screens (⅛- to 1½-in.) are conveyed to a two-deck vibrating screen. The material through the bottom deck of the latter (⅛- to ¼-in.) goes to a stockpiling belt conveyor. The ¼- to ½-in. gravel over this deck is also stockpiled. The oversize off the top deck (½- to 1½-in.) is conveyed to a single-deck screen and its ½- to ¾-in. and ¾- to 1½-in. products are separately stockpiled.

The fines through the lower decks of the two primary vibrating screens (minus ⅛-in.), with the minus ¼-in. fines from the scrubber, flow to a sand drag, and the product is stockpiled as concrete sand. Some of the sand through the stationary screen is diverted to another drag which makes plaster sand; and the overflow of this drag can go to a third drag which makes mason's sand. Usually the sand from the last two drags drops on the same stockpiling belt for combination sand.

The six sizes of aggregates are stored in stockpiles over a reclaiming tunnel. A 205-ft. belt conveyor

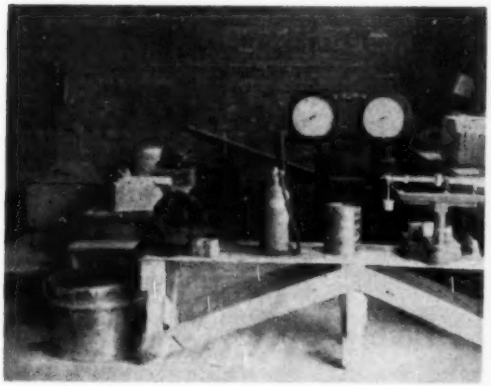


• Three diesel-electric sets furnish the power for the Carpenter concrete block plant.

in the tunnel feeds the desired sizes of aggregates for both the ready-mixed concrete plant and the block plant onto a 272-ft. inclined belt conveyor.

The inclined conveyor from the aggregate tunnel discharges the sand and gravel into the six compartments of the 350-ton bin of the C. S. Johnson ready-mixed concrete plant. Pumice is stored and handled separately. Cement is received in bulk in company trucks and is discharged into a bin from which a Sauerman scraper feeds to a hopper. From this the cement is elevated into a separate storage bin. Cement is fed by a screw conveyor and aggregates through lever-operated gates into the weighing batcher. Kron dial scales are used. This batcher has a revolving spout which can discharge either into the 50-cu. ft. Besser mixer which serves the block plant or the 2-cu. yd. T. L. Smith tilting mixer in the ready-mix plant. Water is weighed, and there is a Pozzolith dispenser. By means of a split chute dry-batched aggregates can also be discharged direct to dump trucks.

Ready-mixed concrete is delivered in two Jaeger agitators of 4-cu. yd. capacity mounted on International chassis. Three Dumpcretes are also used.



• The laboratory, showing the 300,000-lb. compression tester.

• The scale house for weighing out aggregate shipments.

• Terry Carpenter's gasoline filling station.

• Terry's supermarket in Terrytown.

• A typical concrete brick home in the Terry Carpenter development.

The concrete products plant is adjacent to the ready-mix plant, and the concrete is discharged from the mixer previously described direct to the Besser Super-Vibrapac block machine. This machine has been stepped up by installing a smaller driven pulley, increasing its capacity to 780 standard 8- by 8- by 16-in. blocks per hour. The mixer was speeded up by replacing the standard 30-hp. motor with one of 50 hp. A belt conveyor under the block machine returns any waste concrete to the mixer. Erickson, Automatic Transporter, and Yale & Towne lift trucks are used for all handling of racks.

The block, tile, or brick on pallets are handled by an offbearer to the steel racks, which are of special design to fit into the cylindrical kilns. Power lift trucks move the racks to one side, where they stand for 5 to 8 hr. to permit initial set before they are rehandled into the kilns. The three Jackson & Church high-pressure kilns or autoclaves are of cast steel construction and are designed for a maximum pressure of 150 p.s.i. They are 6 ft. 6 in. in diameter by 80 ft. long and each holds 14 racks.

The steam for these kilns comes from an Erie City Iron Works 150-hp. boiler. Each kiln has a ¼-in. water line going into the steam line, which creates a fog. When the pressure inside the kiln reaches the 50-lb. water pressure, the water automatically shuts off. In about 2 hr. the kiln pressure reaches the 150-lb. steam pressure, and the temperature is about 365 deg. F. These conditions are automatically maintained for about 8 hr. and then are dropped back to normal in ½ hr. Safety devices prevent opening the kiln door until pressure is fully released. This cycle is said to eliminate completely the crazing often found in high-pressure-cured products. Each kiln cures two batches daily.

The concrete blocks and bricks are removed from the kilns by power lift trucks. The blocks are stored in the yard. The bricks are taken into a new 50- by 100-ft. building for cubing. There they are unloaded onto a low horizontal belt conveyor from which they are transferred onto special steel pallets made locally, six on each side of the conveyor. On the pallets are corrugated cardboard containers made by the Dubuque Container Company, Dubuque, Ia. When a pallet is loaded to its full capacity, the cardboard is closed up to form a box around the cube, and the whole is bound securely with wire strapping made by the Gerrard Steel Strapping Company. The result is a solid cube which can be handled by lift trucks off the pallets and to yard storage. They also ride securely on trucks. According to Mr. Carpenter, it costs about $3 in labor and materials to cube a thousand brick in this manner.

Mr. Carpenter credits high-pressure steam-curing with most of the remarkable results he is getting in this plant. An average of 38 standard 8- by 8- by 16-in. sand and gravel concrete blocks is obtained per sack of cement with 1,800-lb. strength and 6 percent moisture absorption. The accurate and even gradation of the sand and gravel is an added reason for the high yield. Pumice blocks average 52 to the bag of cement, with 600 lb. strength. The gravel blocks weigh 42 lb. and the pumice blocks 24 lb. each.

Master Builders' Pozzolith is used in all concrete mixes and is added from a dispenser on the mixing floor. Mr. Carpenter is also enthusiastic about "Omricon," Master Builders' mortar admixture, which he recommends using in the ratio of 1 lb. to the sack of brick mortar. The use of this admixture, he claims, eliminates most of the cracking, seepage, etc., in walls which is usually blamed on the blocks. Omricon is used in all the building done by the company and is recommended and sold to block and brick customers.

Blocks and bricks are made in 10 pastel shades, using C. K. Williams colors. These have become so popular that several million are sold annually. Using from 3 to 10 percent of the cement contents, the cost of the coloring is about $1.50 per thousand brick. A written guarantee against fading goes with each order.

Mr. Carpenter also enthusiastically recommends high-pressure curing to other concrete products manufacturers because of the many advantages outlined above. Any block producer should, he says, be able to get a certificate of necessity from the government and a loan from the R.F.C. to put in such kilns by showing that high-pressure curing increases plant capacity without additional equipment, decreases the amount of cement required, and makes a better product acceptable for all government uses.

To interested producers Mr. Carpenter recommends an 8-ft.-dia. kiln as more practical than his 6-ft. 6-in. units because they provide more clearance for racks and men. In setting cylinders he says they should be anchored at one end and otherwise mounted on rollers to provide for expansion and contraction. The natural gas used for fuel in the boiler has a content of 1000 B.t.u.'s per cu. ft. and costs $0.19 per 1,000 cu. ft. This amounts to ½ cent per standard block.

Most of the blocks and bricks produced are delivered by the company's own fleet of trucks. This includes seven semi-trailers of up to 42,000-lb. capacity and five smaller trucks in addition to the ready-mix units already described. A 30-ton truck scale with a 100-ft. platform is used to weigh out shipments. Deliveries are made up to 200 miles east, north and south and 350 miles to the west, where the country is sparsely settled.

The power for all shore plant operations is now supplied by three D13,000 Caterpillar diesel engines burning natural gas. Each drives a 75-kw. generator. Water for all operations is provided by a 6-in. Pomona deep-well pump driven by a 50-hp. G.E. motor.

No salesmen have ever been required to keep the products plant going at capacity. Early in the game, however, Mr. Carpenter personally sold architects on the advantages of high-pressure-cured blocks.

The firm of Terry Carpenter, Inc., is a limited partnership and is owned entirely by Terry Carpenter and his family. H. D. Ellis is superintendent of all operations, his son Bob Ellis is assistant superintendent.

Auburn Cement Products Acquired by J. D. Daly

Glen C. Barnes recently sold his interest in Auburn Cement & Products, Inc., at Auburn, N.Y., to John D. Daly. The business was launched in the present plant in 1916 by George Barnes, father of G. C. Barnes. In 1924 the elder Mr. Barnes sold it to his brother, Claude, who in turn sold it to his nephew in 1937.

Mr. Daly has been manager and vice-president of the firm since 1942. During World War II the output of the plant—building and ballast block—went almost exclusively to the United States Navy.

Lee Hardwick, president, reports the installation of another Hardwick Concrete Company ready-mixed plant in the Kansas City area. The facilities are located at Hickman Mills, Mo., four miles southeast of the Kansas City limits. On October 4 deliveries were started with three 4-cu. yd. transit mixers.

S.E. Regional Meeting of N.C.M.A. Draws Delegates from 28 States

THE seventh Southeastern regional meeting of the National Concrete Masonry Association was held at the Roosevelt Hotel in New Orleans, La., on November 5 and 6.

The Convention proper was preceeded by a meeting of the Texas Concrete Masonry Association, which was conducted by its president, A. J. Clark of Texas Industries, Inc. The convention was also preceeded by a meeting of the board of directors of N.C.M.A. regional group.

Convention sessions began on November 5 in the Gold Room of the Hotel Roosevelt. A welcome was extended by George Katterjohn, past president of the National Concrete Masonry Association, who acted as the presiding chairman for the convention. Mr. Katterjohn called on representatives from various sections to give brief reports on business conditions in their own particular areas.

The consensus was that business during 1951 had been very good and that many expectations had been exceeded. The outlook for 1952 appeared to be very favorable.

The first speaker on the program for the opening session was O. J. Baker, Architectural College, Louisiana State University, Baton Rouge, La. Mr. Baker gave a very informative and educational address, discussing the model concrete block home which had been built on the campus of the university at Baton Rouge. This structure demonstrated the use of concrete masonry for a low-cost home. Mr. Baker could speak with authority regarding this model concrete masonry home, as he was chiefly responsible for its construction and also for its supervision during construction, but particularly because he has been living in the home ever since it was built several years ago. In concluding his address, Mr. Baker said that if members were interested in receiving complete details and literature on this model concrete masonry home, he would send them complete information. He also stated that requests had been received for the plans for this home from every state in the Union and from many foreign countries; the house has been given national publicity in many of the shelter magazines.

Wallace Davis, president of the Hibernia Bank, New Orleans, La., followed this address with a discussion of the subject, *1952, From a Banker's Point-of-View.* It is this

George Katterjohn, a past president of N.C.M.A.

speaker's opinion that 1952 will see a continuation of the present economy, plus a few more government controls. He declared that we must watch carefully the activities of our representatives in our national government, in order to keep our liberties.

Wren Anderson of the National Production Authority gave a brief discussion on the shortages of steel and other critical materials. Many questions were asked regarding the possibility of securing additional steel for reinforcing. Mr. Anderson indicated that the National Production Authority is doing everything possible to relieve the shortages facing producers today, and assured the members that his office is always at the service of producers, to assist them in securing as much material as possible under existing regulations.

Herbert G. Jahncke, vice-president of Jahncke Service, Inc., presided at the luncheon on November 5, introducing Mayor de Lesseps S. Morrison of New Orleans. Mr. Morrison welcomed the members and then gave a pictorial presentation of the many modern improvements being conducted in New Orleans. He presented to Horace Bush, N.C.M.A. president, a key to the City of New Orleans and an honorary certificate making him a citizen of New Orleans.

During the afternoon the ladies attending the convention were taken on a walking tour of the French Quarter of New Orleans, known as the Vieux Carré. The tour took them down such well known thoroughfares as Royal Street, Bienville Street, past the famous Arnoud's Restaurant, and St. Louis Street, to Antoine's Restaurant. They visited the first Spanish theater erected in the United States, Orleans Street, where they saw the famous site of the old Orleans Ballroom, and other interesting points.

The afternoon session convened under the direction of William R. Ireland, president of the Atlanta Aggregate Company and an N.C.M.A. director. Mr. Ireland introduced D. L. Chaney, regional structural engineer, Portland Cement Association, who gave a very interesting discussion of cracks in concrete masonry walls. His talk was illustrated by slides prepared by P.C.A., showing specific problems encountered when cracks appeared in the walls of a South Carolina school. The consensus was that the difficulties arose chiefly out of the misuse of concrete masonry.

E. W. Dienhart, N.C.M.A. executive secretary, gave a brief discussion on *National Planning for* 1952. Mr. Dienhart said that he did not wish to appear as a prophet but indicated that prospects for 1952 were very good. He stated that the association was well aware of the problems confronting the industry because of government regulations and that his office is in constant touch with developments in Washington. Mr. Dienhart made a plea for stronger support of the National Association and for an enlarged membership.

A hearty welcome was extended to the group by President Horace Bush.

Mr. Bush thanked the group for the support given him during the last year and asked for continued backing for the association.

After Mr. Bush's address the meeting was opened to a general discussion. During this period the Texas Concrete Masonry Association requested that their representative, Ralph Rogers, president of Texas Industries, Inc., be permitted to appear before the group and to read a resolution. Permission having been granted, the following resolution was read:

R. E. Copeland, director of engineering, N.C.M.A.

WHEREAS it has been apparent to all members of the Texas Concrete Masonry Association since its inception three years ago, that problems facing the concrete masonry industry call for competent personnel to be in continuous and constant touch with the Federal Government and its agencies in Washington, D. C.; and,

WHEREAS the events of the past three years have shown the absolute necessity for a full-fledged office in the nation's capital for the purpose of

1. Presenting the advantages of concrete masonry to the authorities who write specifications on government buildings

2. Defending the concrete masonry industry from attacks by competitive industries

3. Guarding the interests of the concrete masonry industry against adverse allocations of materials necessary for its continued existence and growth

4. Promoting both private and public building with concrete masonry which otherwise, through ignorance of fundamental facts, might be prevented by certain governmental authorities

5. Rendering direct assistance to individual members of N.C.M.A. on their problems with various governmental departments,

IT IS HEREBY RESOLVED by the unanimous vote of the membership of the Texas Concrete Masonry Association that the N.C.M.A. be asked to proceed immediately to open a full-time office in Washington, D. C., to man such office with personnel both competent and sufficient in number of perform successfully the task above referred to in this resolution.

The urgency in effecting these steps is such that the Washington office should be in full operation not later than March 1, 1952.

Should the income and financial condition of the National Concrete Masonry Association be insufficient to establish and maintain such an office, it is the sense of this resolution that the individual members of the N.C.M.A. members should subscribe additional funds on an annual basis to accomplish these purposes.

IT IS FURTHER RESOLVED that a representative of the Texas Concrete Masonry Association be appointed to present this resolution at the Regional Meeting of the N.C.M.A. to be held in New Orleans, La., on Monday, November 5, and to take such additional steps as may be necessary with the N.C.M.A. to accomplish the desired results.

The above is a true copy of a resolution passed by the Texas Concrete Masonry Association at a meeting of its members held in New Orleans, La., on the fourth day of November, 1951.

TEXAS CONCRETE MASONRY ASSOCIATION,
By C. T. Crowe, Secretary.

After the reading of the resolution Mr. Rogers gave a short discussion of the purposes behind this presentation. It was not the purpose of the Texas Concrete Masonry Association, Mr. Rogers stated, to try to exercise any pressure on the National Concrete Masonry Association, but rather to ask assistance in promoting this office in Washington, as it was felt by the members of the Texas Concrete Masonry Association that by the establishment of such an office in Washington additional help and benefit could be derived by the entire concrete block industry.

E. W. Dienhart, as the Executive Secretary of the National Concrete Masonry Association, was now given opportunity to respond. Mr. Dienhart stated it would be impossible for N.C.M.A. to act upon such a resolution until the annual meeting of the association, which will be held in New York on February 17, 1951. He stated, however, that he would be very glad to present the resolution to the board of directors at its next meeting, and that it would be presented before the meeting in New York in February.

The second day of the convention opened by a meeting at which M. E. Rinker, Rinker Materials Corporation, presided. Mr. Rinker is also a director of N.C.M.A. He presented Charles W. Ireland, president of the Birmingham Slag Company, who spoke on *How An Aggregate and Block Producer Views '52*. Mr. Ireland gave a very informative discussion concerning the making of slag

W. R. Ireland, president, Atlanta Aggregate Company

by his company. Interesting slides illustrated his story of the complete Birmingham operation.

The main address of the second day was given by Dr. J. L. Brakefield, director of public relations of the Liberty National Life Insurance Company. He spoke on the arresting topic, *Is It Worth Saving?* Dr. Brakefield discussed the American heritage and counseled his listeners to guard their fundamental human rights. At the close of his address a standing vote of applause and acclaim was given Dr. Brakefield for his splendid contribution to the convention's program.

Charles Alverson, field engineer for the National Concrete Masonry Association, presented a *Report on Field Survey*. He spent the last several months visiting concrete products plants throughout the country, soliciting new memberships for the National Concrete Masonry Association. He stated that he had been very well received by block producers everywhere and that most of them endorsed N.C.M.A.

R. E. Copeland, N.C.M.A. director of engineering, discussed the series of tests of concrete masonry units now being conducted at the University of Toledo.

During the afternoon members were taken on a trip of several block plants in the New Orleans area. They visited Jahncke Service, Inc., and also Alatex Concrete Service, Inc., where they saw block being produced and had an opportunity to discuss with the men working in the plants the operation of some of the equipment.

During the afternoon of the second day the ladies were treated to a boat trip through the New Orleans Harbor.

The evening session of the second day was a cocktail hour, sponsored

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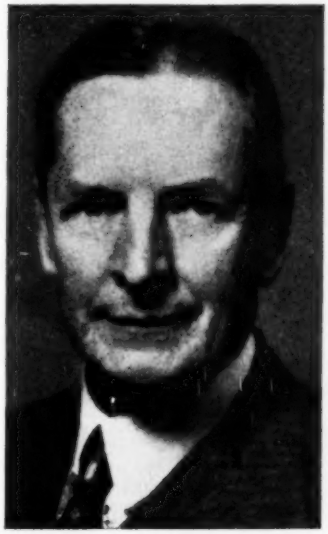
A. C. I. Holds Successful Regional Meeting at St. Louis

Instructive sessions on concrete and steel; H. Whipple to retire as A. C. I. secretary

THE American Concrete Institute held a very successful "regional meeting" at the Sheraton Hotel in St. Louis, Mo., on October 30 and 31. Registration was approximately 225. This was the fourth of such interior conventions held during the fall season, and followed in general the pattern set previously at Birmingham, Boston, and Washington. It has become traditional that all arrangements, including the scheduling of papers, are handled by a local committee. The St. Louis group was headed by A. Carl Weber of the Laclede Steel Co., St. Louis, whose infectious enthusiasm contributed to the pleasure of all who attended.

In his remarks when opening the first session, President Harry F. Thomson, well known among concrete construction men in both Chicago and St. Louis, announced that Harvey Whipple, the veteran secretary of the institute for 32 years, who might be considered "Mr. A.C.I.", would retire from his administrative position at the close of the annual convention of the Institute to be held in Cincinnati next February. Mr. Thomson stated that the board of directors had initiated a plan some years ago under which retired employees would receive substantial annuities, and that Mr. Whipple will be the first to receive benefits under this arrangement. He also stated that a suitable recognition of Mr. Whipple's long service will be a feature of the forthcoming convention.

F. H. Jackson, past president, Washington, D. C., presided at the ensuing technical session. He introduced J. D. Lindsay, engineer of materials, Illinois State Highway Department, who presented a *Four Year Report on the Experimental Continuously Reinforced Concrete Pavement in Illinois.* This section comprised 5½ miles of the reconstruction of U.S. 40, just west of Vandalia, Ill., built in 1947 and 1948. Continuous reinforcement of various percentages was used in stretches of approximately 4,000 ft.



Harry F. Thompson (Material Service Corp., Chicago) president, American Concrete Institute

each. Test areas 30 ft. long were equipped with strain gauges for observation of the effects of traffic and weather. A moving picture showed the construction operations, and gave views of the completed pavement. Mr. Lindsay reported that a recent survey revealed very little cracking, and that this road has been described as the smoothest-riding concrete slab in the state.

The chairman of the luncheon which followed was A. Carl Weber of the St. Louis committeee, who fully lived up to his growing reputation as a master-of-ceremonies, by his entertaining remarks in presenting a number of attendance prizes. Among those at the head table were Chancellor Arthur H. Compton of Washington University, St. Louis; W. W. Horner, consulting engineer and past president of the American Society of Civil Engineers; Karl Koerner, designing engineer and oldest member of A.C.I. in St. Louis; and Professors Croft and Stout, deans of the engineering schools at the University of Missouri and Washington University respectively. The speaker at the luncheon was A. H. Baum, building commissioner of St. Louis and chairman of the Building Officials Conference of America, who outlined the movement which has been under way for some years to develop a model building code which could be adopted by all important cities. He stated that the Building Officials Conference has drawn and made available an emergency ordinance to cover adjustments in present codes which have become necessary under the current restrictions on critical materials.

A series of four papers was presented at the afternoon technical session, for which Mr. Thomson served as chairman. Prof. A. W. Brust, Washington University, summarized his observations during a recent survey of *Ready-Mix Concrete Practices* in the St. Louis industrial area, which covered 24 firms operating 27 plants. He noted that bulk cement was used extensively, except when other than standard portland was required. He observed lignite in some of the Mississippi River Sand; some of the Missouri River sand ran high on fines; and some of the Meramec River sand was not well graded. Meramec River gravel was uniform in mineral composition, but the grading from some of the smaller producers was poor. On the larger industrial, commercial, and housing projects, the quality of the ready-mix delivered was uniform and fully up to specifications. But Prof. Brust did observe concrete being used in some smaller outlying houses which was so wet as to represent questionable quality; in such cases the ease of flowing into and around the foundation appeared to be the criterion on the part of the contractor. In these instances, the speaker commented, the "purchaser undoubtedly received the quality for which he paid".

In the ensuing discussion, Stanton Walker, Washington, D. C., commented that, even in the scattered cases of apparently poor ready-mix, the concrete in place was probably of much better quality than the same contractor would have produced by job-mixing.

The use of steel forms in the recent construction of the various foundations, pedestals, and the slurry tank of a cement mill was described by L. A. Wagner of the Missouri Portland Cement Company, St. Louis. He cited four advantages of steel forms over wood

on such construction; (1) a more tidy job site; (2) greater strength and rigidity of the forms; (3) greater rapidity of erecting and dismantling; and (4) better appearance of the finished construction. He concluded that the use of steel forms had resulted in a lower overall cost of this project.

Professors E. W. Carlton and Joseph Senne, both of the Missouri School of Mines, at Rolla, reported on a research project on *Strain Measurements in Welded Wire Fabric Reinforced Concrete Slabs.* The paper pointed out that welded mesh of cold-drawn wire offered good crack control because such wire could carry higher unit stress than hot-rolled bars. A series of tests of slabs containing mesh of different size and spacing showed that all cracks from normal loading had closed on release of the load, provided that the strain in the mesh had not exceeded the elastic limit. Close inspection after such loading had shown no instance of a break in the weld.

The contents of a new handbook for the concrete designer, to be titled *Useful Data,* was outlined by Raymond C. Reese, consulting engineer, Toledo, Ohio. This book will be published shortly. It summarizes seven years of work, totaling 24,000 man-hours in tabulating the calculations for all likely bar combinations in columns and slabs conforming to the A.C.I. Building Code for interior and exterior panels. Mr. Reese predicted that *Useful Data* will take the drudgery out of the design of reinforced concrete slabs and columns. There was general agreement from the floor that the book will be a valuable new tool for the structural engineer.

The informal dinner that evening in the Sheraton's beautiful Club Caprice was a gala occasion. The

Stanton Walker
Secretary, American Concrete Institute

St. Louis committee had supplied flowers on all tables; and sparkling refreshment was served during the meal. Both a dinner orchestra and a barber-shop quartet were on hand. Mr. Weber, on behalf of the committee, again distributed attractive attendance prizes. There was general comment and the evening set a high-water mark for attractive A.C.I. affairs, which have sometimes rather neglected the social side.

The evening's toastmaster was William C. E. Becker, consulting engineer, St. Louis, and a member of A.C.I. Building Code Committee. Introductions of those at the speakers table were made by President Thomson; these included speakers on the technical program and members of the committee. In the course of his remarks Mr. Thomson announced that the board of directors had authorized the following awards for service and papers, which will be presented formally at the annual convention in Cincinnati in February:

Turner Medal to Raymond E. Davis.

Lindau Award to Douglas E. Parsons.

Wason Medal for meritorious paper to Walter H. Price.

Wason Research Medal to W. J. McCoy and W. G. Caldwell.

Construction Practice Award to Otto Safir.

The address of the evening was presented by Col. F. W. Green, retired president of the St. Louis-Southwestern Railway Co., St. Louis, on the subject *Backward or Forward.* His remarks were a scholarly review of the trend toward socialism which has characterized the American scene during the last 20 years, citing the experience of the railroads in featherbedding and other unproductive practices as typical. The speaker closed with an urgent appeal to the public to reverse this trend by insisting on productivity as the basis for the continued welfare of America.

The third technical session was held on Wednesday forenoon, October 31, with H. J. Gilkey, past president, Ames, Ia., presiding. The first paper was an illustrated description of *Field Practices in the Construction of Multiple Story Concrete Tanks* by E. J. Critzas, Borsari Tank Corp., St. Louis. These large tanks have been adopted by a number of leading breweries, notably in St. Louis, Milwaukee, and Minneapolis, for the storage of beer during aging. The tanks are approximately a story in height, and the structure usually comprises six built one above another in a continuous unit.

Prof. R. B. B. Moorman, University of Missouri, presented an *Analysis of Prestressed Concrete Structures,* as based on the concept of an equivalent load method. His rather simple stress diagrams gave an interesting approach to prestressed structures under various conditions of loading, though they may have given an over-simplication of the complex problems involved.

Conservation by Design was a topic presented forcefully by O. W. Irwin, of the Rail Steel Bar Association, Chicago. He pointed out that during the last 20 years the allowable working stresses in concrete had been increased by greater percentages than the increase in stresses in steel, although samples of the steel could be tested to determine the characteristics in advance of use, whereas the characteristics of the concrete were assumed to be the

(*Continued on page* 160)

Prominent A.C.I. members in St. Louis inspecting the first application, on a large concrete frame building, of the latest in reinforced concrete construction. Left to right: Harry F. Thomson, A.C.I. president; Frank H. Jackson, a past president of A.C.I.; H. J. Gilkey, another past president; and Albert H. Baum, building commissioner of St. Louis.

Santa Ana Concern Furnishes Pipe For Irrigation Project

By HARRY F. UTLEY

another ON THE SPOT report

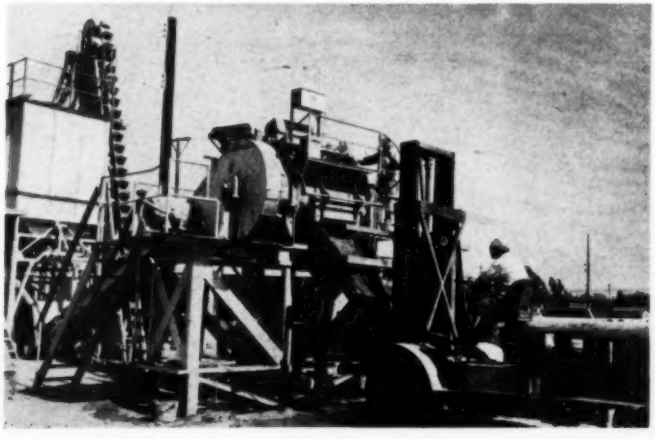
FOR more than a score of years the Peerless Concrete Pipe Corporation of Santa Ana, Calif., has been producing concrete pipe for irrigation purposes in the fields and groves of southern California. Starting from scratch back in 1928 with a small 3⅛-acre plant and yard, it has an annual capacity today of 20,000 tons of machine-made tongue-and-groove pipe, while its plant has been expanded to cover 6 acres. The concern has kept abreast of technical developments in the industry, has mechanized its operations to a high degree, and has one of the nicest looking layouts to be found anywhere. Besides manufacturing the pipe, the company also engages in the installation of irrigation systems within a 150-mi. radius of its plant, laying practically all its output.

A couple of years back it won a subcontract to produce and lay the pipe going into Unit No. 9 of the $13,500,000 Coachella Valley Distribution System of the U.S. Bureau of Reclamation under the general contractor, R. V. Lloyd & Co., Russellville, Ark. The Coachella project is destined to reclaim more than 50,000 acres of potentially rich but now waste desert land for agriculture by supplying the soil with life-giving water from the Colorado River. The water is conducted from the Imperial Dam on the California-Arizona line by the All-American Canal and thence by a network of concrete pipe-lines to the arid area around the Salton Sea. The Peerless part of the big job involves more than 100,000 lineal feet of 12- to 18-in. plain and 21- to 39-in. reinforced pipe.

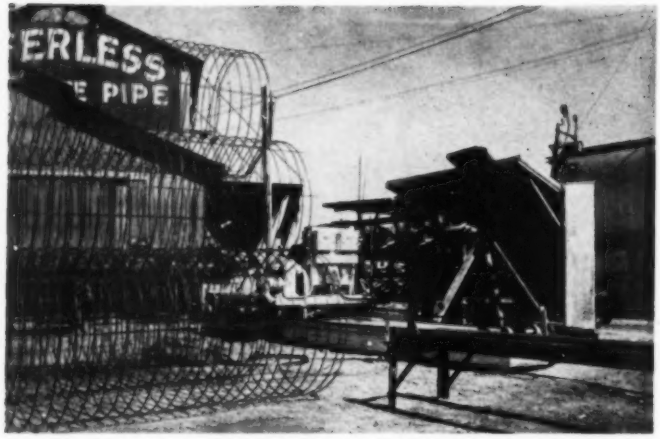
• An interesting perspective, showing the storage yard, the building housing the packer-head machine and the mixer, the batch plant (right), and curing rooms (left) at the Peerless Concrete Pipe Corporation's plant in Santa Ana, Calif.

Until the Coachella job was undertaken, the company had made only non-reinforced pipe. Therefore, before starting this job, it added equipment to facilitate the pouring of reinforced-concrete pipe and fabrication of the steel cages. The steel-reinforced pipe is being cast in vertical steel forms in uniform lengths of 8 ft. Concrete is mixed in a new 40-ft. Besser batch mixer set up especially to prepare the mix for pouring the 8-ft. sections. A short inclined belt conveyor was installed to elevate the aggregates and cement. These materials are batched by weight at a batch plant which normally serves a tamp-type machine at the plant. The dry-batched ingredients discharge directly into the mixer as they come off the belt, water is accurately measured by a Neptune meter, and the Protex air-entraining agent introduced in the proper amount by an electric dispenser. Type II cement is used exclusively according to Bureau of Reclamation specifications, which take into account the high-alkali desert soils.

A Wayne crane handles the ¾- and ½-cu. yd. concrete buckets which are used to fill the pipe forms. Viber air-powered vibrators are hung externally on the steel forms to insure complete compaction around the reinforcing, five vertical forms being poured at a time in approximately 2-ft. lifts to improve the density of the concrete. The vibrators are allowed to operate continuously while all five forms are intermittently filled with concrete. Air for the vibrators is sup-



• A concrete bucket, carried by one of the industrial trucks, is loaded at the 40-ft. mixer. The dispenser is seen above the mixer.



• The company-built cage winder (right) with some of the completed re-inforcing cages.

• A crane swings a bucket of concrete over the line of forms used in making the vibrated re-inforced concrete pipe.

plied by a Schramm portable 315-c.f.m. diesel-powered compressor.

Curing is done with live steam, huge plywood boxes being lifted by the crane and placed over the filled forms soon after the pour is completed. After overnight cure, the steam is shut off, the curing boxes are lifted, and the steel pipe forms are stripped for re-use. The boxes are again placed over the bare pipe and the steam is turned on for an additional 50 to 60 hrs. of continuous low-pressure curing at temperatures averaging about 125 deg. F.

The pipe sections are regularly tested in the yard by government inspectors. Inspection involves 3-edge compression, as well as hydrostatic-pressure tests. Standard procedure is for the inspector to select at random a sample pipe from each pour after curing is entirely completed. If it passes inspection, as it usually does, no further tests are deemed necessary. Should the chosen sample fail on either count, however, two more sections are tested from the same day's pour before the lot is accepted.

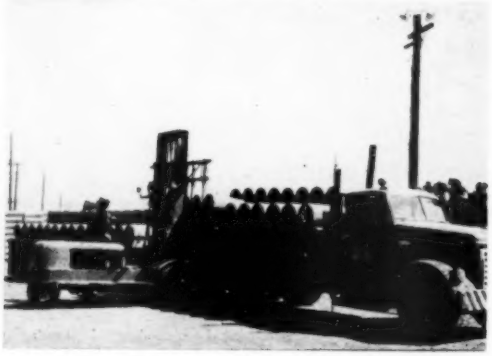
The company designed and built its own cage winder, which can quickly be changed over from one pipe diameter to another by changing the spokes on the winding wheel to a shorter or longer radius. Each intersection of the steel is spot-welded after winding and the forming rolls through which the wire passes are calibrated to set the proper curvature in the steel before it is wound, eliminating tension or stress in the finished cage.

The small-diameter plain pipe in regular production and that made for the Coachella Valley project is produced on a packer-head machine

(*Continued on page* 160)

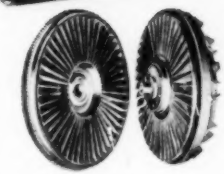
• President M. W. Crouch and E. H. Drinkgern, secretary of Peerless Concrete Pipe Corporation, standing beside a loaded truck.

• A truck and trailer being loaded with small-diameter Peerless plain pipe for delivery to the Coachella Valley project.



Lick "down-time" with YALE 3-POWERED ECONOMY

FLUID DRIVE



Exclusive! Increases clutch life. Gives unfailing, smooth, full power at any speed even on steep ramps. It's the same *fluid* coupling used on fine passenger cars, adapted to heavy industrial use.

HYPOID GEARING

Exclusive! A rugged, over-capacity, yet compact drive. Fully enclosed against dirt and other sources of wear. 4-pinion drop-forged differential with "floating" axles take road shock in stride.

65 HP ENGINE

Exclusive! A cool-running, 6-cylinder industrial engine that gives full floating power at all times. All-weather waterproof ignition. 4-point stress-free, rubber cushioned mounting kills vibration strain and wear on truck.

Only YALE gas trucks give you these 3 money-saving features that keep trucks on the job

LICK "down time" and you knock out the big cost factor in gas truck operation. You keep your production rolling steadily, at peak levels—while your truck operating costs stay at rock bottom.

YALE, and only YALE, fork-lift gas trucks can give you this big plus—extra strength, extra power, extra precision-geared smoothness throughout the "power line" from engine to differential. Exactly where it's needed most!

While other trucks are "down for repairs" this one *keeps on* moving materials in close quarters, on long hauls, indoors or out, stacking loads nearly 16′ high.

That's why YALE 3-powered economy means *more work done every day* plus *more days on the job!* Find out now about putting this economy in your plant.

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In Canada write The Yale & Towne Mfg. Co., St. Catharines, Ontario

YALE GAS AND ELECTRIC INDUSTRIAL TRUCKS • YALE WORKSAVERS • YALE HAND TRUCKS • YALE HAND AND ELECTRIC HOISTS

Michigan Concrete Draintile Assn. Convenes at Holland

By ROGER R. NOLAN

another ON THE SPOT report

AT a gathering attended by 51 persons, including the wives of six manufacturers, on October 30 in Holland, Mich., the Michigan Concrete Draintile Manufacturers' Association met with guests from Indiana, Ohio, Wisconsin, and Minnesota to collaborate on problems confronting their industry. Numbered among the guests were representatives of the Portland Cement Association and faculty members of Michigan State College and the University of Minnesota. The Michigan men expressed hope that steps would be taken to organize similar associations in other states, the ultimate goal being a national association of concrete draintile manufacturers.

The meeting was highlighted by a plant tour of the Dunn Manufacturing Company, makers of concrete brick, block, roof tile, and draintile machinery; a talk on the durability of draintile by Professor Phillip Manson, agricultural engineering department, University of Minnesota; and a banquet given at the Warm Friend Hotel by W. E. Dunn, owner and president of the Dunn Manufacturing Company in Holland.

Following registration in the reception room of the Dunn plant, the concrete draintile manufacturers and their guests were taken in groups to the Dunn plant's demonstration room, under the supervision of W. E. Dunn, Norman Dunn, sales manager of the Concrete Equipment Company, which is affiliated with the Dunn Mfg. Co., and Russell Reeve, Colorcrete sales manager. Here they viewed demonstrations of the Colorcrete mixing and spraying machine, the Champion draintile machine, the Duntex roof tile machine, the Hydro-Morpak block machine, and the Cavitex concrete brick machine. After all groups had visited the demonstration room, the entire party was conducted through the factory to view the large machine shop, welding room, and mixing room.

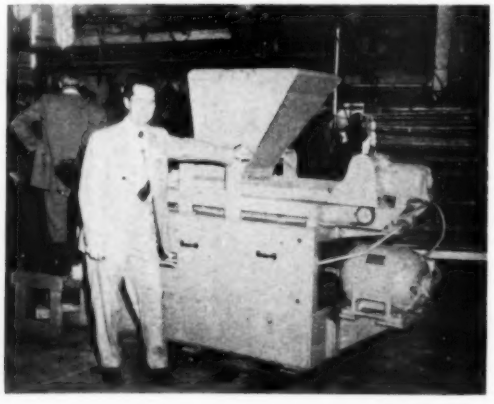
After completing the plant tour, the association and their guests adjourned to the Tulip Room of the Warm Friend Hotel. J. G. Martin, district engineer of the Portland Cement Association, who presided at the afternoon meeting, started the proceedings with the introduction of guests. Professor Manson delivered the feature talk of the session.

The speaker pointed out that the three reasons contributing to the failure of concrete draintile are

• Left to right: E. H. Kidder and W. A. Cutler, both of Michigan State College, East Lansing, Mich.; Russell V. Smith, Yale Tile Company, Yale, Mich., president of Michigan Concrete Draintile Assn.; J. M. Schuch, Schuch Bros. Machine Company, Unionville, Mich., secretary-treasurer of the association; and T. W. Hoyle, Linwood Tile Company, Linwood, Mich.

• Below, left: Harry Otto, secretary-treasurer; Hugo Laabs, vice-president; R. E. Troller, sales manager; and J. A. Krause, president—all of Riverside Dunbrik Company, Milwaukee, Wis.

• Below, right: Norman Dunn, sales manager, Concrete Equipment Company.



line action. He demonstrated, by the use of slides, the results of overloading concrete draintile, and a method for determining the maximum load the pipe will carry. He explained that, generally speaking, the wider the trench, the heavier the load on the tile.

In many sections of the country farmers are confronted with the problem of a soil having a high sulphate content, Professor Manson indicated. This high sulphate content, owing to the presence of $MgSO_4$ or Na_2SO_4 in the earth or water in the soil, can cause concrete drain tile to swell and crack. The speaker believes that the only way to combat this condition of the soil is to use a sulphate-resistant cement in the production of the draintile to be placed in any such contaminated area. Sulphate-resistant cement can increase resistance to this condition as much as 2,000 percent, he said.

Regarding the acid situation, Professor Manson warned the group of the very serious problem of exposing draintile to soils having a high acid content. He pointed out that you can't stop the action of acid on concrete, but you can slow the action by using a high quality of tile. He gave the following criteria for the manufacture of a good acid-resisting draintile: careful selection of aggregate; use of a rich mix; use of as much water as the mix will stand; curing at 125-130 deg. F. the first day; and yard storage for at least 30 days before using. Professor Manson, in conclusion, declared that the absorption test was one of the best for determining the quality and uniform strength of concrete draintile.

Following the banquet there was a brief business meeting, which was held in the banquet room of the Warm Friend Hotel. Russell V. Smith of the Yale Tile and Builders Supply, Yale, Mich., president of the association, presided at this session. W. A. Cutler, agricultural engineering department, Michigan State College, invited the association to place an exihibit during farmers' week at Michigan State College, in order to give the farmers a better chance to get acquainted with members of the association. The group voted to accept the invitation and to appropriate sufficient funds for the affair. At the suggestion of Mr. Cutler, the association decided to hold its third annual convention and election of officers at Michigan State College, East Lansing, Mich., on February 11, 1952. The present executive body of the association includes Russell V. Smith, president; David T. Watkins of the Watkins Cement and Block Company, Flint, Mich., vice-president; and Joseph M. Schuch of Schuch Brothers Machine Co., Unionville, Mich., secretary-treasurer.

• Professor Phillip Manson, University of Minnesota, guest speaker, and W. E. Dunn, Dunn Manufacturing Company.

Three years ago several Michigan draintile manufacturers were having trouble in producing quality tile to meet the requirements set up by Michigan State College standards. Realizing the situation, Mr. Smith, with the aid of Mr. Cutler and Cal Meredith of the Portland Cement Association, organized a meeting of Michigan draintile manufacturers. In 1949 this group met at East Lansing to form the present association.

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S. E. Regional Meeting

(*From page* 152)

by the Lone Star Cement Company of New Orleans.

The entire conveniton program was ably handled by the directors of the convention—Herbert Jahncke, Jahncke Service, Inc., Lewis Lloyd, Alatex Concrete Service, Inc.; and Tom Goodbee, Crescent Concrete Products Corporation.

Then George Katterjohn asked the group where they would like to go for the meeting in 1952.

It appeared that members thought well of West Palm Beach, Fla., for their next convention meeting place. Mr. Katterjohn stated that at the New Orleans meeting there were approximately 175 registrations, representing 28 states and 80 plants. Present also were 67 ladies. This far exceeded any previous convention and gave assurance and interest to the men who were responsible for the meeting to carry on toward a larger and more successful convention in 1952.

A. C. I. Meeting

(*From page* 154)

same as other similar mixes. Allowable stresses in steel are somewhat higher in most of the European countries than in the United States. He argued that conservation alone justified consideration of higher stresses in the present-day high-yield-point bars, and suggested as high as 30,000 p.s.i. or 50 percent of the guaranteed yield point in 60,000 lb. steel.

The session closed with a new motion picture *Rail Steel in the World Today*, for which the noted commentator Lowell Thomas was narrator, and which presented dramatically the production and some of the applications of such steel in concrete structures and for other purposes.

In the afternoon a party of about 150 took an inspection trip in chartered buses, which included the Veterans Hospital, the new produce market center in North St. Louis, and a large housing project, all currently under construction. The wholesale market comprises two two-story structures, each 1,200 ft. long, built entirely with tilt-up construction; it was stated that the two-story wall panels, weighing up to 98 tons, were the heaviest so far built by the tilt-up method. The trip ended with a tour through the famous Anheuser-Busch Brewery, the largest brewery operation in the world.

Campbell Block Facilities Sold to Clarke and Finch

Facilities of the Campbell Concrete Block Company in Maysville, Ky., were recently acquired by the Standard Supply Company, manufacturers of Brikcrete. The new owners, John H. Clark and James M. Finch Jr., announced that two new wings will be added to the present plant to house their Brikcrete equipment. Full-scale production of concrete block and Brikcrete is expected to be reached by January.

Standard purchased franchise rights from the Brikcrete Company of Grand Rapids, Mich., two years ago for the northern Kentucky and southern Ohio area and turned out Brikcrete in its Maysville warehouse. Joe Gillespie Jr., manager of Brikcrete production and sales, will continue as supervisor of the expanded operation.

Out-Size Drum-Type Mixer Used in Building Big Plant

A concrete mixer capable of mixing 168 cu. ft. of concrete in one batch is being used in the construction of the U. S. Steel Corporation's new $400,000,000 plant at Morrisville, Pa.

Largest drum-type mixer ever manufactured, it was made for the Warner Company of Philadelphia, Pa., by the Worthington Pump and Machinery Corporation. It is capable of filling a 6½ cu. yd. "Hi-up" truck-mounted agitator to capacity with a single batch. Three additional mixers of this type have been ordered, one of them by Miron Freres of Montreal, Quebec.

The North Central Commercial Aggregate and Ready-mixed Concrete Association held its annual convention on November 8 and 9 at the Nicolet Hotel in Minneapolis, Minn. The featured speaker was Vincent P. Ahearn, secretary of both the National Sand and Gravel Association and the National Ready-mixed Concrete Association.

Fred C. Hedrick Sr., who was president of the Jacksonville Concrete Company, Jacksonville, Fla., died in a local hospital on October 23. Mr. Hedrick had been ill for several months. He was 67 years of age.

Santa Ana Concern

(*From page* 156)

of the company's own design. A modern batch plant and an 18-cu. ft. Besser mixer supply concrete to the machine hopper. Pipe diameters for the sub-lateral lines at Coachella range from 12 to 18 in., while the sizes in most demand for domestic irrigation systems run from 6 to 14 in.

● This 315 c.f.m. compressor supplies air to the vibrators which are hung on the outside of the pipe forms.

Green pipe from the packer-head machine is placed on skids and transported to the four curing rooms by power lift-truck. After a room is filled, the counterweighted door is closed and the pipe is allowed to attain initial set for a 3-hr. period before the steam is turned on. Thermostatic control of the large and small jets automatically keeps the temperature of the wet, low-pressure steam within a 115-130 deg. range during the night and the pipe, still on the skids, is removed to the yard the next day for further curing by sprinkling in the open air. Plain pipe from 30 to 42 in. in diameter is produced on a San Jose tamper with separate 12-cu. ft. Besser mixer and batch plant (now used to batch material for the reinforced pipe).

Hyster 40 and Ross power lift-trucks handle and load all the smaller pipe, both green and cured. A new 15,000-lb. Ross unit for heavy-duty service is now on order to augment the fleet. The larger reinforced-concrete sections are handled and loaded by the crane.

Three 25-ton-capacity GMC diesel "900" flatbed truck-and-trailer units are used for delivery. These maintain regular schedules between the Santa Ana plant and the Coachella project, a one-way distance of about 120 miles. The company has a fleet of trenchers, backfillers, cranes, trucks, etc., and its own crew installs the pipe. Bulldozers and a motor grader are also parts of the essential equipment, since it is first necessary to "pave the way" through the rugged desert country for the heavy trucks which bring in the pipe.

M. W. Crouch is president, and E. H. Drinkgern is secretary of the Peerless organization. Superintendent Otto Blazer and L. S. Gittins are directors. The company is a pioneer member of the Western Concrete Pipe Association.

Milt Libby has been appointed sales manager of Lavrite Concrete Products at Kennewick, Wash., succeeding Wayne Albertus. He has been associated with local building trades for ten years.

NEW MACHINERY and SUPPLIES

● Steel Windows

Steel casement, basement, and utility windows are available from the Vento Steel Products Company, 250 Colorado Street, Buffalo 15, N.Y.

The windows and necessary casings, lintels, and accessories are made to fit standard masonry construction of concrete block or other materials. The company lists a wide variety of sizes of casement windows in ventilating or fixed styles and with divided panes or picture type. Dimensions are standardized for interchangeability of screens, storm sash, etc., and for ease of erection in standard construction.

● More Powerful Trucks

Truck-Man "Skid-Lift" and "Pallet-Lift" trucks have been given increased horsepower in all models. Originally the trucks were powered by 1.2 hp. engines, but there has been a steady increase in power in succeeding models until the present one with 5.8 hp. was announced. The trucks are powered with Wisconsin Model AKN air-cooled gasoline engines.

Other features of the Truck-Man line such as 360-degree steering, pneumatic-

tired drive wheels, and load ratings to 3,500 lb. are unchanged. Truck-Man trucks are built by the Truck-Man Division of The Knickerbocker Company, 571 Liberty Street, Jackson, Mich.

● Dispersing Agent

A dispersing and foaming agent for air entrainment in concrete has been announced by the Onyx Oil and Chemical Company, 190 Warren Street, Jersey City 2, N. J.

The new material, "Foamasol," is a liquid concentrate that is added to the concrete at the rate of about ¼ oz. per bag of cement. This amount is said to give adequate air entrainment for normal use. It is of the protein-type of dispersing agent and is a stable liquid that can be stored and handled under all conditions encountered in concrete manufacture.

Memo to ready-mixed concrete producers

The advantage to you of the Bureau rating plate, which guarantees you full payload capacity and mixing ability in your truck mixers, is being increased by constant advertising to more than 90,000 architects, engineers and contractors.

(Advertisement below is being read by your best customers in Architectural Record, Engineering News Record and Western Construction.)

Worth $300,000,000
plus
3 CUBIC YARD MIXER
GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
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N.R.M.C.A. REGISTRY No. 10

The Bureau rating plate is available to all manufacturers who meet its quality standards and requirements.

This truck mixer rating plate is what enables architects, engineers and contractors to confidently buy more than $300,000,000 worth of ready-mixed concrete a year.

It guarantees at a glance the proper drum design and speed, accuracy of water control *and full amount of free mixing space* needed to properly mix or agitate a rated batch.

Always look for this rating plate in order to avoid questionable concrete from non-standard truck mixers.

Truck Mixer Manufacturers Bureau

BLAW-KNOX DIVISION, Pittsburgh, Pa.
CHAIN BELT COMPANY, Milwaukee, Wis.
CONCRETE TRANSPORT MIXER CO., St. Louis, Mo.
THE JAEGER MACHINE COMPANY, Columbus, Ohio
THE T. L. SMITH COMPANY, Milwaukee, Wis.
WORTHINGTON PUMP & MACHINERY CORP., Dunellen, N. J.

● Marking Stencils

Stencils of brass or copper in adjustable or custom-made styles are available from the Pannier Corporation, 207 Sandusky Street, Pittsburgh 12, Pa.

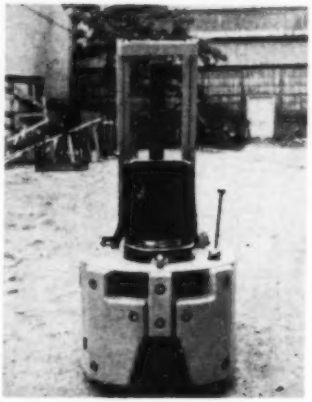
Alphabets and numerals may be obtained in a wide variety of sizes and styles for lettering and numbering or special stencils may be obtained with firms names, trademarks, and other special designs incorporated. Flat or curved surfaces may be stenciled with some of the types made.

Product and manufacturer identification stencils, shipping stencils, and specification stencils are some of the kinds that can be supplied, as well as inks, brushes, and other supplies.

● Lift Truck Counterweights

Changes in the Hyster Model 20 lift truck now permits the use of the truck at 24-in. load centers with 2,000-lb. capacity. This additional capacity is made possible by the use of three additional counterweights that fasten on the rear of the frame with eight cap screws. Load pins and other parts of the machines have been strengthened to accommodate the increased weight. The weights are easily attached or removed, so that the truck is not burdened with excess weight when it is not needed.

The Model 20 is also available with a skeleton counterweight instead of the standard one which is incorporated in the steering trunnion. This converts the truck into a 1,300-lb. capacity machine



600 lb. lighter than the standard model. The conversion is made by changing the steering trunnion.

It is claimed that these changes will permit the same Model 20 lift truck to function at six different combinations of load centers and capacities. The Hyster Model 20 is a product of the Hyster Company, 2902 N. E. Clackamas Street, Portland 8, Ore.

● Wall Reinforcing

A wire reinforcing mesh for concrete masonry walls manufactured under the name of Wal-Lok has ¾-in. diameter steel rods spaced to run horizontally in the center of the faceshells of concrete block masonry. The rods are crosstied with Na. 9 gauge steel every 16 inches. When imbedded in the mortar, Wal-Lok is said to prevent shrinkage and to eliminate cracking, as the steel serves to tie the wall together.

Deformed ends on the rods need only overlapping to provide continuous bonding at corners and where several lengths are needed in longer walls. Wal-Lok is made so that no additional thickness of mortar is needed in the joints in which it is installed. Adrian Peerless, 1401 E. Michigan Street, Adrian, Mich.

● Diesel Lift Truck

Diesel power is announced for the Clark Yardlift-40. The new model has a Hercules Model DIX-4D diesel engine which has a displacement of 166 cu. in. and develops 44 brake horsepower at 1950 r.p.m.

The new engine is intended to pro-

vide more economical operation by reducing fuel costs. Other features of the Yardlift-40 have been retained except for minor modifications needed for the diesel operation. Yardlifts are manufactured by Clark Equipment Company, Industrial Truck Division, Battle Creek, Mich.

● Waterproofing Compound

A transparent liquid waterproofing compound is now being marketed under the trade name of "Dashide". This material is claimed to be completely colorless, and is resistant to acids, alkalis, and temperature extremes without checking, cracking, or peeling. Application is by spraying or brushing. The material is said to penetrate ¼ in. or more into the surface, sealing all hairline cracks with no visible change in the exterior.

This material has been used on many installations, including the Naval Supply Depot at Bayonne, N.J., where it withstood the effects of a hurricane over three years after being applied.

Dashide is a product of the Dasco Company, Baltimore 31, Md.

The Kent Machine Company of Cuyahoga Falls, O., has announced the closing of its Detroit agency representation. Sales will be handled from the home office through Dan Urban, sales manager.

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"Hi-Speed"
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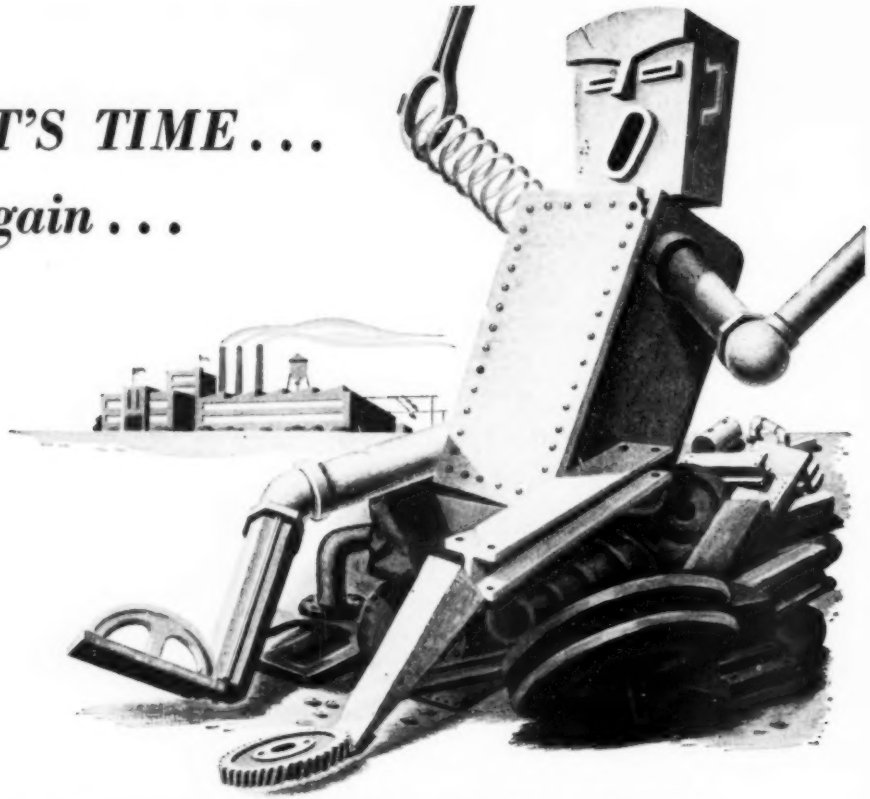

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Last year, 1950, we produced 97,800,000 tons.

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While steel mills are producing at a greater rate than ever, scrap inventories have dwindled. Many mills are operating on a hand-to-mouth basis with shut-downs threatened unless we furnish more scrap.

We *do* have the scrap. It's everywhere, not just in the form of *production* scrap—the "leavings" of machining, normally turned over to scrap dealers . . . but also in the form of *idle* metal: obsolete machines and tools, no-longer-usable jigs and fixtures, gears, chains, pulleys, valves, pipe, abandoned steel structures, etc.

We must have this *idle* metal to keep the furnaces running.

Please cooperate. Set up a Scrap Salvage Program in your plant—*now.* For a complete plan on "how to do it", write for booklet "Top Management: Your Program for Emergency Scrap Recovery". Address Advertising Council, 25 W. 45 Street, New York 19, N. Y.

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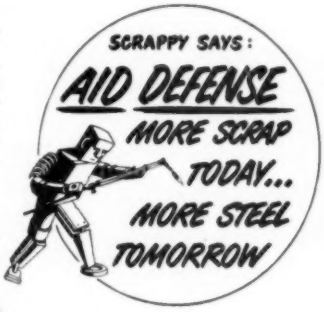
Steel is made half from pig iron, half from scrap. With production on the increase, more scrap must be purchased. And it's up to you to "dig it out" and sell *it.*



NON-FERROUS SCRAP IS NEEDED, TOO!

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In 1951 (even exclusive of government orders) Hyster industrial truck volume was the largest in Hyster history. Hyster sales (again exclusive of government orders) are nearly equally divided between present Hyster owners and entirely new owners.

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Here is a partial list of businesses in which Hyster trucks are saving time, money, manpower. If your business is listed, we can give you up-to-date materials handling information. See your Hyster dealer or write direct to us.

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- ☐ AIRCRAFT & AIRCRAFT PARTS MFG.
- ☐ AIRLINES
- ☐ APPAREL MFG.
- ☐ AUTOMOBILE, TRUCK & BUS MFG.
- ☐ AUTO SUPPLIES & PARTS MFG.
- ☐ AUTO SUPPLIES, PARTS WHOLESALERS
- ☐ BAKERIES
- ☐ BOAT AND SHIPBUILDING
- ☐ BOILER AND TANK MFG.
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- ☐ BOTTLING & BEVERAGE WHOLESALERS
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- ☐ BUILDING MATERIALS MFG.
- ☐ BUS LINES
- ☐ CEMENT MFG.
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- ☐ CONSTRUCTION, GENERAL
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- ☐ MACHINERY & EQUIPMENT DISTR'S.
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- ☐ METAL & STRUCTURAL STEEL MFG.
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- ☐ MINING, METAL
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- ☐ MINING EQUIPMENT MFG.
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HYSTER COMPANY

THREE FACTORIES

2926 N. E. CLACKAMAS STREET, PORTLAND 8, OREGON
1826 NORTH ADAMS STREET . . . . PEORIA 1, ILLINOIS
1026 MEYERS STREET . . . . . DANVILLE, ILLINOIS

HYSTER 20 (2,000 lbs. capacity). One of 5 fork-type models from 2,000 to 15,000 lbs. cap.

HYSTER STRADDLE TRUCK®. Two models of 18,000 and 30,000 lbs. capacity.

HYSTER KARRY KRANE®. Versatile mobile crane with 10,000 lbs. hoisting and transporting capacity.

HYSTER TURRET TRUCK. Horizontal transporting unit. 4,000 lbs. capacity. 4 models.

It Beats the Band...

how OSWALT SERVICE pleases Vibrapac Owners everywhere

From Minneapolis, Minn.

"I certainly do appreciate having your Engineering Service at our block plant. It has helped to increase our production from 600 to 900 8" units per hour."

(Name on request)

From Napa, Calif.

"We installed Oswalt's engineering service and equipment at our plant last fall. We are very well pleased with its performance. It has given us about 2000 blocks per 9-hour day, over and above our previous operation."

(Name on request)

THESE letters are typical of the many we receive from our subscribers to Oswalt Service, showing definitely proven results in terms of Increased Block Production, Greater Plant Efficiency, Reduced Labor Costs and Extra Profits.

Why don't you make '52 a more prosperous year by getting your *vibrapac machine Oswalt-Serviced* before your busy season starts!

It will boost your output from 600 to 900 blocks or more per hour . . . without any sacrifice of quality. Once you become a subscriber, remember that Oswalt Service is available at all times to help keep your operations at top level efficiency.

Many satisfied customers operating more than sixty machines.

Write or phone for the Oswalt-Serviced plant nearest you.

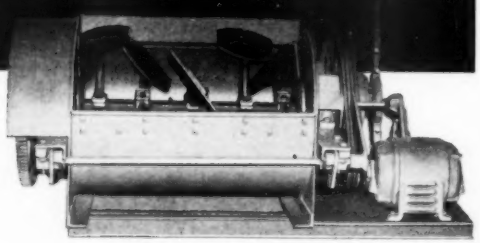
OSWALT ENGINEERING SERVICE CORP.
1335 Circle Avenue, Forest Park, Ill.
Phones: EStebrook 8-3666 . . FOrest 6-3898

MULTI-BLADE MIXERS

Faster—Better—LOWER COST Mixing

"Super Action" blade arrangement gives these "super" results! Unlike the two conventional spiral blades, which push the mix one way along their entire length, Multiplex' ten paddle shaped blades push the mix in opposing directions. This cutting, turning, and kneading produces thorough mixing in shorter time, at less cost. Liner wear is reduced, as the mix is churned against itself.

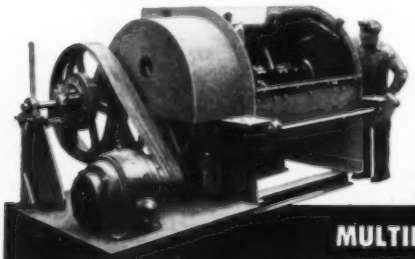
Around these "super action" paddles Multiplex builds a solid, dependable mixer with all the common sense advantages of: convenient charging height, discharge door control in front, anti-friction bearings, and wear-resistant, replaceable liners and blades.

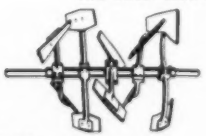


V-belt drive, rear discharge, 18-cubic foot capacity

Many *Multi-Blade Mixers*, in standard sizes from 3 to 60 cubic feet, are in stock for immediate delivery. All models may be had mounted on rubber tired steel trucks. Discharge door may be in the rear, either end, or bottom, or in more than one location, as desired.

Special Mixers are made to suit your special requirements. During our 40 years of successful mixer design and manufacture we have produced mixers as large as 600 cubic foot capacity.





V-belt drive, end and rear discharge, 60-cubic foot capacity

To profitably operate any mixer, it must fit your needs and facilities. Multiplex engineers can help you plan your plant expansion. We can supply the superior mixers, fully automatic block machines, vertical and inclined skip hoists, and the compartment aggregate bins required for successful plant operation.

MULTIPLEX Machinery Corporation • Elmore, Ohio

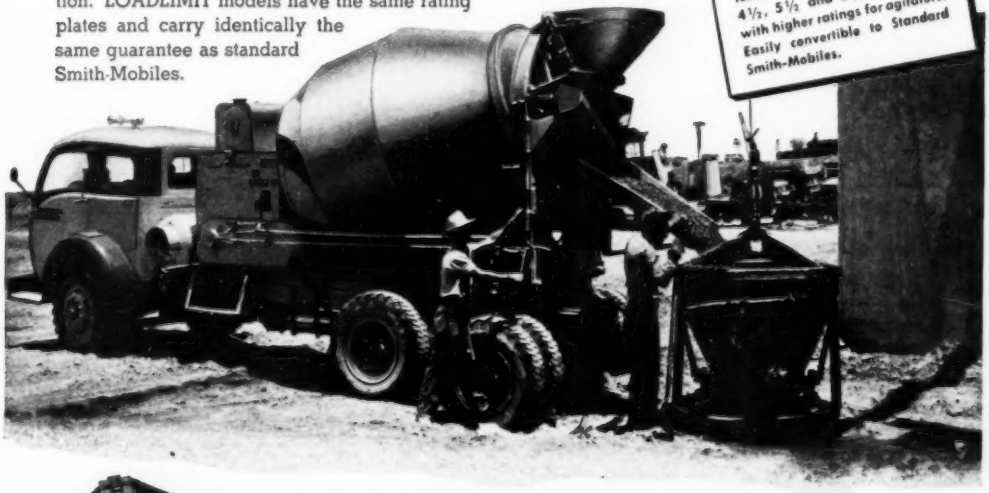
Smile with Smith-Mobile

SAY...THAT'S A SWELL WAY TO DELIVER MY CONCRETE

Your Customers Also Benefit from SMITH LOADLIMIT Models

You can deliver MAXIMUM PAYLOADS and still keep your customers happy. Smith-Mobile LOADLIMIT models have the same efficient drums as standard models. You get the same uniform mix from the first cubic foot of concrete discharged to the last cubic foot . . . whether it's one yard or eight yards. LOADLIMIT machines have the same patented "T" shaped blades made of the same gauge Manten steel as the heavier standard models. In fact, LOADLIMITS and standard Smith-Mobiles are identical, except that LOADLIMITS have no sealing doors to open or close . . . no operator's platform . . . no chute lifters . . . no sign panels, etc. The parts that have been removed are not necessary to smooth and efficient operation. LOADLIMIT models have the same rating plates and carry identically the same guarantee as standard Smith-Mobiles.

You save three ways with Smith LOADLIMIT Truck Mixers — (1) Lower initial cost, (2) Lower operating costs, (3) Lower maintenance costs. Available in 3, 4½, 5½ and 6½ yard sizes, with higher ratings for agitators. Easily convertible to Standard Smith-Mobiles.



LET YOUR NEARBY SMITH DISTRIBUTOR explain to you the PROFIT possibilities of Smith Tilting Mixers and Smith-Mobile Agitators for your Ready-Mix plant. These dependable machines enable you to deliver high-quality concrete with speed and certainty at lowest cost per yard. Ask for literature.

THE T. L. SMITH COMPANY, 2887 N. 32nd St., Milwaukee 45, Wis., U. S. A.

SMITH — THE T. L. SMITH CO. MILWAUKEE, U.S.A.

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

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Concrete Manufacturer Classified Section

Advertising Rate Per Issue: $10.00 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

Stearns No. 9 Joltcrete

BLOCK MACHINE

in good operating condition and including 4", 6", 8", and 12" mold boxes, and miscellaneous attachments.

All above listed machinery priced at $3,000.00

F. O. B. our plant, Kansas City, Mo. where it may be inspected. Contact A. R. Waters by 'phone, wire, or letter.

THE CARTER-WATERS CORP.
2440 Pennway, K. C., Mo.
Ph. Grand 2570

SPACE HEATERS

War Surplus Bargain

New — Ready To Use!

40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel.

—Electric blower—12 V. DC or 110 V. AC using small transformer which we furnish with each heater.

Portable, Quick, Clean Heat

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

$95.00 each

Clapp, Riley and Hall Co.
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Chicago 6, Illinois

FOR SALE

One chimney block attachment for Stearns Model A Power Clipper plus 650 — 8 x 8 Cast iron pallets and 300 — 8 x 12 cast iron pallets. Price $1,000.00 FOB our plant.

Watkins Concrete Block Company, Inc.
4215 R. Street Omaha, Nebraska

PACKER-HEAD WINGS
Both McCracken Type and Martin Trowelers—PROVED to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

1—Appley-Yellen, two unit per cycle, semi-automatic block machine, complete with 8" and 4" attachments. With mixer and skip loader. With parts to make bull nose, sash and fractionals in 8" compartment. Stock of repair parts.

2500—8" aluminum pallets.

4000—4" aluminum pallets.

With block racks to accommodate pallets.

Equipment approximately one year old—in excellent condition—can be seen in operation.

Reason for selling — installing larger equipment to care for tremendous increase in business.

Write — Virgil Howie
Standard Block Company
Gulfport, Mississippi

FOR SALE

1—Besser Super Tamper.
1—Besser Victory Tamper.
1—Stearns Model A Clipper.
2—Besser 25 ft. Mixers.
2—Besser Offbearing Hoists.
Pallets, racks and mold boxes.

Plant now in active operation. Available in Jan.-Feb. 1952.

Priced to move.

FAIRMONT WALL PLASTER CO.
Fairmont, West Virginia
Phone: 1520

BULK-CEMENT BINS

AGGREGATE-CEMENT BINS

CEMENT CONVEYING SCREWS

WEIGH-BATCHING EQUIPMENT

CEMENT-AGGREGATE ELEVATORS

L. K. LIPPERT COMPANY
212 E. 1st St. (phone 18) LONDON, O.

FOR SALE—One brikcrete plant complete with 2 machines, mixer, 20 large racks, pallets, and skip hoist.

WANTED—Fork lift truck and (72 block) racks for 18" pallets.

KILDONAN CONCRETE PRODUCTS, LTD.
600 Jamieson Avenue Winnipeg, Man.

JOLTCRETE #7 FREE, WITH PURCHASE OF PALLETS

One Joltcrete #7 Machine, 4" and 8" Attachments:
3000 50% Void 8" Pallets @ .50 Cents
2700 4" Pallets @ .35 Cents
2000 Solid 4" Pallets @ .30 Cents
Machine can be seen in operation until January 1st.

CEDARTOWN BLOCK & CONCRETE CO., INC.
Jefferson St., Cedartown, Georgia
Tel.: 509

WANTED

Concrete pipe cast type molds suitable for rubber gaskets. Diameters 12 inches to 120 inches. New or used.

Box No. 559, c/o Concrete Manufacturer
431 S. Dearborn St., Chicago 5, Illinois

UNBREAKABLE PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fame Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

100,000
PRESSED STEEL PALLETS
In Stock
Send tracing or pallet for quotation.
#7 Joltcrete 4-8-12 Mold Boxes
$2500.00 — good condition
GENERAL CONCRETE EQUIPMENT CO.
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PERMA-TILER MACHINE

For making French or Modern Style inter-locking cement shingles. Like new. 3000 heavy gauge steel pallets—1200 never used. Make offer.

GEO. MANCIL COMPANY
1616 N. Gettysburg Avenue Dayton 7, Ohio

FOR SALE

1 Multiplex, 1 Stearns Clipper A with pallets and crates for 4x8x12, 4x8x16, 8x8x12 and 8x8x16 with boxes. All available now.

ENTWISLE'S CONCRETE BLOCK
5290 Forestville Road Washington 19, D. C.
Phone Hillside 4252

FOR SALE

One—2 Block Lith-I-Bar concrete block machine, 4" x 8" x 12" attachments, also spare parts. 1950 model. Air compressor available with machine. Like new.

JOHN WHITMAN AND SONS
MIDLAND, MICHIGAN

DRAGLINE

For sale: Bucyrus-Erie 34B 1-Y4 yard. Cat. Diesel, 50' boom. A really good clean machine. $13,500.00.

EDGAR PLASTIC KAOLIN CO.
Edgar, Florida Ph. Hawthorn 2992

For Sale

1 Besser Super Tamper K—3 Mold 4—6—8—10 and 12 with 2500 Pallets available in 30 days. $6000.00.

Braddock Building Material Company
Woodlawn & 13th Street
Braddock, Pennsylvania

CONCRETE MANUFACTURER CLASSIFIED SECTION

FOR SALE
COMPLETE BLOCK PLANT

Stearns Clipper Stripper Model "A", 1—Bag Mixer, 18 cu. ft. skip hoist, 8" & 4" Mold boxes complete, Pallet oiler, 21 Racks with Jack felt truck, 1500—4" pallets, 500—8" pallets.
This is a complete plant including all motors, starter and switch boxes, wiring, etc.
Asking price: $2,000.00 complete.

RAY BRENNER
Croydon R. D. No. 1, Pa. Bucks County

FOR SALE

1—Stearns Clipper Stripper Skip Hoist, approximately 1000 pallets.
1—Another, with Skip Hoist, Mixer 4", 6", 8", & 12" Mold Boxes.
500—8" Pallets and 500—6" Pallets.

SULLIVAN CINDER BLOCK & CEMENT PRODUCTS
800 South Court Street Sullivan, Indiana
Phone 866

FOR SALE

Complete—one floor Kent block plant machinery with motors, 1000 pallets, racks. Bonded Scale crusher (new), lift truck. All guaranteed A-1 condition—$2500.00.

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Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 24 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO.
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3—Jaeger Truck Mixer 2 yd., with trucks
1—95 ton B-K all steel bin with scale & batcher
1—9B2 McK.-Terry steam hammer
1—11B2 McK.-Terry steam hammer with leads and Hose
1—CMC 2 compartment Bin-a-batch on rubber
1—Mpls. Moline tractor with lull loader with all attachments
1—3 Drum gas hoist with swinger 70 H.P.

CHAS. H. HOGAN
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FOR SALE

1 Universal 8-Bar. Tamper with 7¾ 45% attachment.
1 Double 3¾" attachment.
1 11¾" attachment.
1800 7¾ steel pallets.
1900 3¾ steel pallets.
1200 11¾ steel pallets.

All this equipment in A #1 condition.

Write: Universal Block Machine Co.
C. S. Emert, Manager
224 Avalon Place
Peoria 5, Illinois

WANTED

Pallets—12 inch—Cast Iron or Steel, for Stearns Jolt Crete #9.

GRANITE CONCRETE BLOCK & COAL COMPANY
Phone: 4717 Elyria, Ohio

WE WANT TO BUY a used 4-in. mold box, stripping pins and 6,000 steel pallets and a used 12-in. mold box, stripping pins and 2200 steel pallets for a Sterns-Joltcrete block machine No. 9, serial no. J-96.

Universal Concrete Pipe Company
297 S. High Street, Columbus, Ohio

Lima Type 802

LIFTING CRANE

SERIAL NO. 32817

With 18'11" crawlers, 36" treads, 125' boom and 25' gib, backhitch gantry, running board on operator's side, power (live) boom hoist, boom hoist sling, 6 cyl. 6½x6½ type "WAK" Waukesha gasoline engine with electric starter, foot accelerator, multiple line block, single hook with overhauling ball and cables; two-drum hoist in place of standard boom hoist; roller guard assembly; rudomatic tagline winder.

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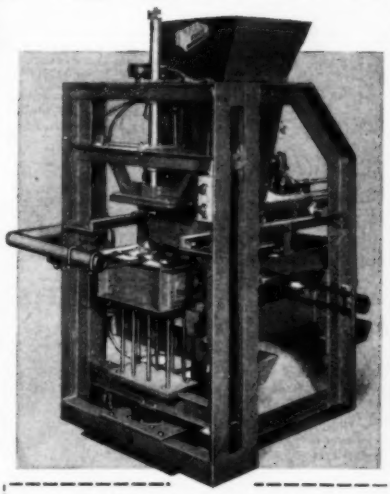
Isn't This The Time To Consider The Installation Of A KENT STANDARD BLOCKMAKER?

● *Heretofore* blockmakers with small and medium output have been handicapped by slower, less efficient methods and higher unit costs.

We say *heretofore* because with the development of the KENT Blockmaker this situation changed materially.

Through the embodiment of advanced methods in a compact, highly efficient machine, requiring minimum manpower attention, blocks are produced in volume and at a price that brings a profit comparable with that of the big fellow. And it enables him to compete with the large volume producer while having to make a relatively modest investment.

Sounds incredible we know but simply let us explain. First write for the illustrated booklet.



The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO
Manufacturers of
CONCRETE PRODUCTS MACHINERY SINCE 1925

Send Blockmaker Literature to

Name _____

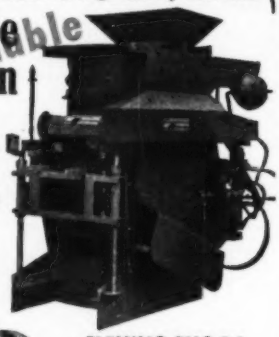
Address _____

City _____

It's FLEMING of ST. LOUIS-for High Quality-Low Cost

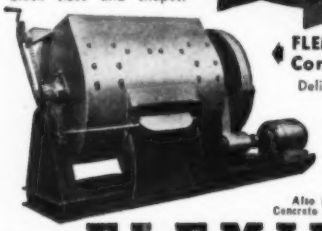
Unbeatable Combination

— for high production of the finest, most uniform high strength CONCRETE BLOCKS



FLEMING FMC 180 Automatic Block Maker

180 blocks per hour producer. Plain pallet vibrator uses "wood" or steel pallets. Complete range of block sizes and shapes.



FLEMING FMC 24 Concrete Mixer

Delivers a thorough mix to one or more block machines. Priced as a two-sack mixer with THREE SACK drum and gear reduction capacity.

Also Inquire about our Concrete Drain Tile Makers.

FLEMING MANUFACTURING CO.

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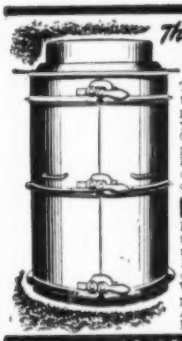
Phone Flanders 7800

COMPLETE CONCRETE BLOCK PLANT EQUIPMENT



The "Quinn Standard" FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request. Also manufacturers QUINN CONCRETE PIPE MACHINES.

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All-welded ELEVATOR BUCKETS

light • durable • quick cleaning

For maximum elevator capacity with minimum h.p. requirements, use Johnson cement and aggregate buckets. All-welded steel, with heavy-gauge lips and ends, they're light, durable, smooth for fast filling, quick cleaning. Three sizes cement: 10x6", 12x7", 14x8" . . . 4 aggregate: 10x6", 12x8", 14x8", 16x8".

Long-life steel chain has carburized steel knuckles, medium carbon steel side bars, welded bucket lugs, alloy heat-treated ⅝" pins. You'll find that carburized steel parts last longer than malleable iron.

Mail to C.S. JOHNSON CO. Champaign, Ill. (Koehring Subsidiary)

Send information on: ☐ buckets ☐ elevator chain for (type of material)

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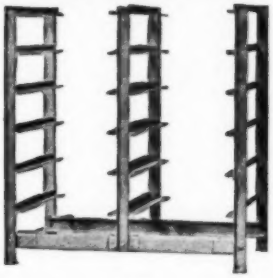
STREET _____

CITY, STATE _____ J243PQ

CHASE BLOCK RACKS, CARS, PALLETS

Corrosion-Resistant Hi-Strength Alloy Steel



For Fork or Platform Lift Trucks

CHASE — THE LAST WORD IN
- DURABILITY
- ECONOMY
- EFFICIENCY

Sturdy construction • any style or capacity • Shipped knocked down • Rigid Field connections • assembled Easily

CHASE Foundry & Mfg. Co.

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With the Famous -

MARVEL JR.

CONCRETE DRAIN TILE MACHINE

Produce flat-end drain tile in various sizes and combinations at record low cost. Quick profits for you in steady paying business, demand far exceeds production. Machine ready for use when it arrives—will pay for itself and a profit in a few days. Write for Drain Tile Bulletin.

CONCRETE MACHINERY CO.

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SEPTIC TANK FORMS and HANDLING EQUIPMENT

- Speeds up all operations
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- Only one man required for delivery
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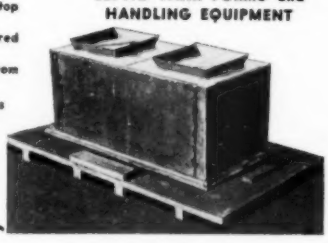
Write for full details



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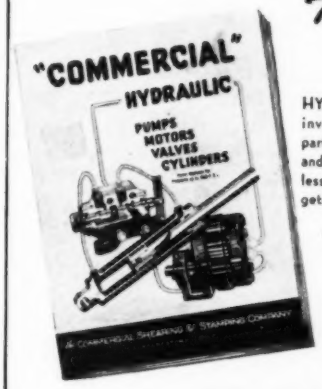
Your Copy Will Be Profitable

To You!



HYDRAULIC circuits involve fewer moving parts—can be arranged and mounted to occupy less space in "hard-to-get-to" locations.

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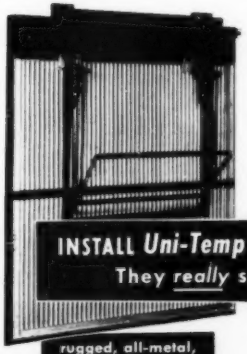
Cure *better* block—
at *lower* cost!

by stopping costly losses of heat and steam through kiln doors or covers that don't *really* seal and insulate. Your cost per block goes *down* when you stop pouring fuel $$$$$ into the open air. And you get *better block* too—because you get more uniform curing conditions throughout the kiln.



INSTALL *Uni-Temp* CURING ROOM DOORS
They *really* seal and insulate

rugged, all-metal, fully insulated!

Ask too about the *Universal* DOOR CARRIER
World-famous door handling equipment—since 1904

Write:
UNIVERSAL DOOR CARRIER, INC.
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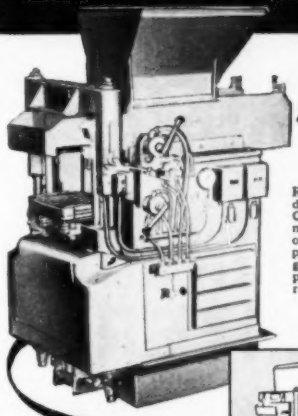
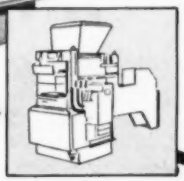
HIGHEST QUALITY BLOCKS...
LOW INITIAL INVESTMENT

Columbia
"BASIC" Block Machine



Rugged, versatile design, the Columbia Basic meets every need of the small producer and will grow with production requirements!



ADD PALLET FEEDER AND FEED DRAWER AGITATOR

. . . when demand requires higher production, just add pallet feeder and feed drawer agitator to speed up production, keep pace with sales!

ADD AUTOMATIC CONTROLS AND PALLET CLEANER

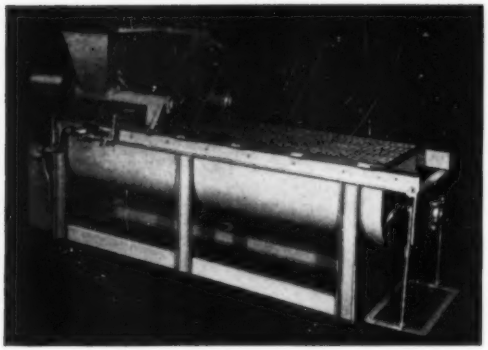
. . . and your Columbia Basic becomes a most modern, fully automatic, electronic controlled block maker! The Basic truly grows with production requirements!

THE COLUMBIA BASIC INCREASES IN VALUE AS BLOCK PRODUCTION GROWS!

As more production capacity is needed, you can add a pallet feeder, feed drawer agitator, automatic controls and pallet cleaner! Each addition speeds production . . . increases the machine's value as a block producer and profit maker for you! Use the same basic Columbia from manual operation to fully automatic! Keep abreast of your block production with a Columbia Basic and you'll keep abreast of the block making industry!

Write home office for name and address of sales representative in your area.

Columbia MACHINE WORKS
107 S. GRAND AVE. VANCOUVER, WASH.



JONES

(Formerly Yoder)

CONTINUOUS MIXER

embodies so many radically new improvements that it is freely predicted this mixer will rapidly replace batch mixers in plants requiring a mixer capacity adjustable from about five up to 20 or more cu. yds. per hour. In addition to low first cost (much less than that of a batch mixer) it embodies these important features:

1. *Vibrating Belt Positive Feed* reduced aggregate, regardless of moisture contents, to CONSTANT VOLUME. Makes expensive weighing equipment and moisture determinations unnecessary.
2. *Accurate Proportioning* by means of aggregate gates which, when once set for a production run, need no further attention.
3. *Variable Speed Drive* gives accurate volume control to meet varying block machine requirements, from 5 to 20 cu. yds. per hour.
4. *Cement Economy* — greatly improved mixing action insures up to 50% higher strength of concrete, making for maximum cement economy by using leaner mixes.

These and other exclusive features are illustrated and described in new Mixer Bulletin—yours for the asking.

THE J. A. JONES CONCRETE MACHINERY COMPANY

108 Horning Rd., Pittsburgh 34, Pa.

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*See also Detailed Information in 1951 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

NOW MORE THAN 120 LICENSED MANUFACTURERS Producing

Patented

homeward *Concrete* **STEPS**

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

For Complete Information Write

ROGER F. WILLIAMS, Licensor

3420 S. W. 9th St. Des Moines (15), Ia.

Another Leader IN THE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS!

★ This is the 91st of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

A. Donati, Foreman and D. V. Donati, President, examining one of the block produced on their Vibrapac.

Mr. D. V. Donati, President of Duracrete Block Company says: "The VIBRAPAC is the Only Equipment that We Have Ever Had with which We Have Made Any Money"

This direct statement by Mr. Donati reflects the high regard he has for Vibrapac equipment. His company is located near Manchester, N. H., in the heart of New England. Premium block and aggressive merchandising have greatly increased the acceptance of quality concrete masonry in this area.

Prior to 1949, the Duracrete Company operated other block making equipment. In August of that year they installed their first Vibrapac machine under the Vibrapac Agreement Plan. Since then the machine has been operating continually and the company has made a substantial profit every month.

Besser Vibrapacs are profit-making machines because they are fully automatic and continue to operate, day after day, week after week, with no "down time". Get all the facts.

Write for literature.

Besser Front Pallet Feed Vibrapac installed in Duracrete plant.

BESSER MANUFACTURING CO
Complete Equipment for Concrete Products Plants
ALPENA, MICHIGAN, U. S. A.

Interior view of the Duracrete Block Company plant located near Manchester, New Hampshire.

Stockpile of block in cubes for economy in handling. Cubing of block permits higher stacking in limited yard area.

BESSER

BATCH MIXERS | SKIP LOADERS | BLOCK & BRICK CUBERS | SUPER VIBRAPAC | SINTERING PLANTS | ACROW CENTERS | ROOF TILE MACHINE

Eola Plaza, Orlando, Fla. Archt. —Garry A. Boyle, Tampa, Fla. Engr.—Nathan Grout, Tampa, Fla. Contr.—Paul Smith Const. Co., Orlando, Fla. Pozzolith Ready-Mixed Concrete supplied by Super Concrete Co., Orlando, Fla.

Better Concrete because it's POZZOLITH READY-MIXED CONCRETE

Enthusiastic reports from builders of such outstanding structures as this 152 unit apartment project on the performance of Pozzolith Ready-Mixed Concrete are proof of its superior qualities.

Pozzolith's three-way action of dispersing cement, reducing water and entraining the optimum amount of air produces, among other benefits:

- EASIER PLACEABILITY — means lower placing costs
- REDUCED SHRINKAGE — means less cracking
- LOWER PERMEABILITY — means less "waterproofing" . . . later
- GREATER DURABILITY — means lower maintenance costs

Whether your job is an industrial plant, reservoir, hospital, bridge, tunnel or sewage treatment plant, it will pay to look into the money and time saving advantages of Pozzolith Ready-Mixed Concrete.

Write for full information.

Over 600 Leading Ready-Mixed Plants Are Producing Pozzolith Ready-Mixed Concrete

Over 600 Leading Ready-Mixed Plants are now equipped with the POZZOLITH AUTOMATIC DISPENSER

WHY?

Because a producer can, at lower cost:

1. Produce concrete of low permeability . . . with normal Portland cement.
2. Produce high-early strength concrete . . . with normal Portland cement.
3. Produce air entrained concrete without strength loss . . . with normal Portland cement.
4. Produce all of the above properties out of one cement bin . . . with normal Portland cement — stepping up production, reducing inconvenience in handling and cutting costs.

•

In normal mixes, concrete of any given durability, strength and workability, is produced more economically with Pozzolith than by any other means.

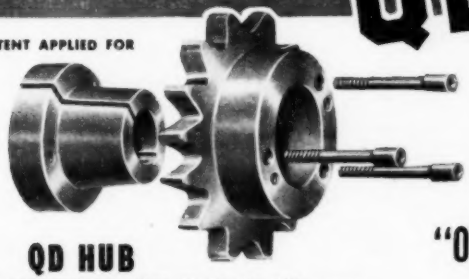
The MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO

FORT WORTH QD ROLLER CHAIN SPROCKETS

WITH TAPERED SPLIT HUB

PATENT APPLIED FOR

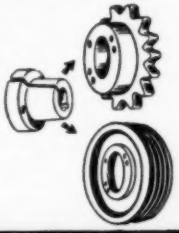


ELIMINATE REBORING!

QD HUB ALSO FITS QD V-Belt Sheave

Speed changes are simplified and "spare" sprockets can be carried more easily.

If your favorite distributor doesn't stock this new item, tell him about it. He'll reward you with better service.



"OFF THE SHELF" SERVICE AVAILABLE FROM INDUSTRIAL DISTRIBUTORS

Reboring of stock bore sprockets to fit various shafts is eliminated due to the various bores available in the QD hub. Installation and removal from the shaft is made easy by the tapered fit of the hub and sprocket. Hub assembly grips the shaft equivalent to a "press fit."

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KANSAS CITY
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CINCINNATI
NEW YORK
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V-BELT DRIVES
SCREW CONVEYORS and ACCESSORIES
SCREW ELEVATORS
INDUSTRIAL FANS

FORT WORTH STEEL & MACHINERY CO.
Dept. 2512 3600 McCart Street FORT WORTH, TEXAS

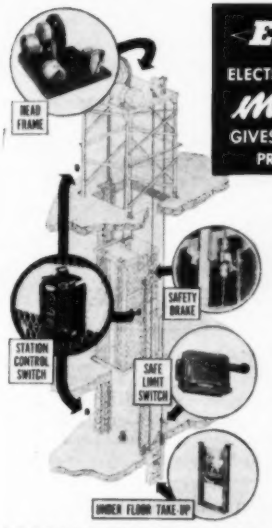
The Machine Gun Camera Sees All... Tells All!

The machine gun camera snaps a picture every 1/5 second to show what *really* happens when a blast is shot. Ask your representative to show you the picture presentation of the ROCKMASTER story.

ATLAS POWDER COMPANY
Wilmington, Delaware

CHEMICALS ATLAS EXPLOSIVES

Advertise your wants and surplus equipment in



EHRSAM ELECTRIC manlift

GIVES WORKMEN MORE PRODUCTIVE TIME

CARRIES them swiftly and safely from floor to floor, increases plant efficiency, and saves the worker's time.

The Ehrsam electric manlift has a rugged, all-steel cage, steel head frame, a smoothly operating drive unit and worm gear reducer unit.

Safety features include positive stopping magnetic brake, limit switches and cable speed governor.

The EHRSAM electric manlift is made in 300 and 500 lb. capacities. With wood or steel guides.

ADDRESS INQUIRIES TO DEPARTMENT

THE J. B. EHRSAM & SONS MFG. CO.

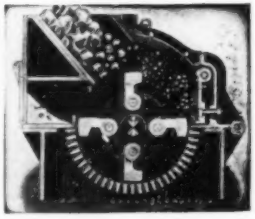
ESTABLISHED 1872 • ENTERPRISE, KANSAS, U.S.A.

For Cost Reduction on Material Reduction...

WILLIAMS' "HEAVY-DUTY"

HAMMERMILLS

Built to take 6" feed and reduce to agricultural limestone, ¾" stone and other small sizes in *one operation!* Crushing occurs on unusually heavy breaker and grinding plate before reaching grate. This permits grates to be used for sizing only, minimizing wear. The result; more output, more quickly reduced at less operating cost.



Sectional view of Williams "Heavy-Duty" hammermill, with heavy liners and grinding plate for limestone and other hard material. Particular attention is directed to the grinding plate adjustment which assures uniform close contact of hammers and grinding plate at all times. Also note the metal trap which provides an outlet for the escape of tramp iron.

WILLIAMS ALSO MAKES...

Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

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WC48-9

WILLIAMS
CRUSHERS GRINDERS SHREDDERS

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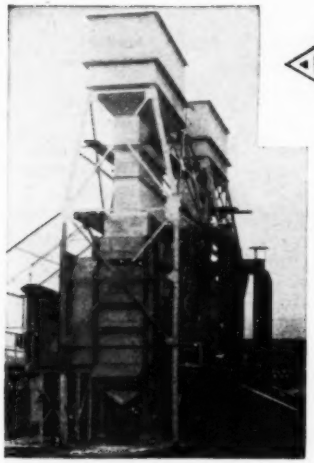

ELLERNAN

CALCINER for burning LIMESTONE MAGNESITE DOLOMITE etc.

4 SIZES AVAILABLE

PREHEATS — CALCINES — COOLS

AUTOMATIC CONTINUOUS OPERATION
MINIMUM FUEL CONSUMPTION

There are extra dividends available in the operation of your plant when you use Ellernan Calciners . . . let us explain the exclusive features . . . write today for literature and detailed information applicable to your operation.

THE ELLERNAN CO.

Continental Bank Bldg. Salt Lake City, Utah

THIS ELEVATOR BUCKET CANNOT FAIL TO EMPTY

ON EVERY TRIP!

PEKAY M-T-MATIC BUCKETS *can't* retain Sand-Coal-Gravel or other granular materials, even if close-packed. Separately mounted Stripper-Plate *must* push up and out when it starts over pulley radius . . . gives irresistible leverage to dislodge and sweep out bucket contents. **CONTROLLED-CAPACITY DELIVERY . . . MORE MATERIAL AT SAME OR FASTER BELT SPEEDS . . . .** *Easy to Install . . Saves Belts . . Cuts Maintenance.* **THOUSANDS NOW IN USE.** (Standard buckets also available.)

★*Send for prices today—Quick delivery—(Give present bucket size)*

PEKAY MACHINE & ENGINEERING CO.

100 N. LASALLE ST. • CHICAGO 2, ILLINOIS

Bucket Ladder Dredges
for **Sand—Gravel**

Screen Plates — Bucket Pins

Sand Pumps

YUBA DREDGES — PROVED DEPENDABILITY

Yuba Jigs

YUBA MANUFACTURING CO.

Room 718, , 351 California St., San Francisco 4, California, U. S. A.

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SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.
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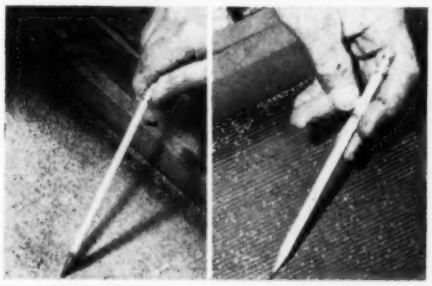

Without Heater note blinding of mesh

With Heater note lack of blinding

increase capacity and life of your screens with the HANCO Electric Screen Heaters

Used on any single or multiple woven-wire screen; No. 2 mesh or smaller; Hanco Electric Screen Heaters reduce the moisture content of sand, limestone, lime, clay etc. to prevent "blinding". Screen capacity is increased as much as 50%. Beating to open the screen is eliminated; screens last longer. Write for bulletin.

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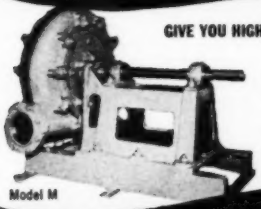
Lightning **SAND & GRAVEL PUMPS**

GIVE YOU HIGH CAPACITY AT LOWEST COST...



Model M

Lightning Semi-Heavy pumps deliver against 90-ft. heads, pump 9 yds. an hour from 3-in. size. Also 4, 6, 8-in. sizes. Lightnings have the lowest first, replacement and operating costs of any pump built. Write for information.

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YOUNG MAN, 30 to 45 yrs., supervise marble quarry and crushing plant. Working knowledge of marble business and managerial ability desirable. Splendid opportunity. State age, experience, references, salary expected, etc. **Box No. 364, c/o Pit & Quarry, 431 S. Dearborn St., Chicago 5, Illinois.**

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ANYWHERE
We look into the earth
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CONTRACTORS
Fireclays, coal, limestone, gravel deposits, all minerals. Blast hole drilling.
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EXPERIENCED MAN WITH AN ENGINEERING BACKGROUND, PREFERABLY A GRADUATE IN MECHANICAL ENGINEERING. SHOULD HAVE HAD AT LEAST 5 YEARS EXPERIENCE IN DESIGN, CONSTRUCTION OR OPERATION OF MATERIALS HANDLING EQUIPMENT. APPLICANT SHOULD HAVE EXPERIENCE WITH VIBRATING SCREENS, ELEVATORS, CRUSHERS, (ALL TYPES), BELT AND SCREW CONVEYORS, MIXERS (ALL TYPES), PUMPS (ALL TYPES), LOCOMOTIVE ENGINES, CAR SPOTTERS, COOLERS, DRIERS, BALL MILLS, FANS AND CRANES. SALARY COMMENSURATE WITH ABILITY AND EXPERIENCE. OPPORTUNITY FOR ADVANCEMENT WITH ESTABLISHED PRODUCER OF AGGREGATES LOCATED IN SOUTHEASTERN STATES. IN REPLY STATE AGE, EXPERIENCE AND REFERENCES.

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COMPLETE PLANTS FOR LIQUIDATION

Complete plants for liquidation, equipment, machinery, structural steel, pipe, and tonnages of scrap iron.

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WANTED

Revolving Screen approximately 60" diameter 18 or 20 ft. long. Quote best price. Serial No. & make.

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Position as Quarry Superintendent, 20 years experience. Can operate all equipment, Weld, Shooting, Public Relations, and Office Work Organizing.

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1—Model HA - Hough Payloader..... $1,250.00
1—Steam Boiler, 75#, New Tubes W. Va. Inspection..... $ 200.00
1—10 HP, 3 Phase Electric Motor..... $ 175.00

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By C. W. Lindgren. 2nd Printing

Useful for those who are not fully acquainted with trucks, loading equipment, shovels, cranes, tractors, scrapers, bulldozers, motor graders, rollers, trenching machines, paving and crushing and aggregate washing equipment. 290 pages, 120 sketches.

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30" SUPERIOR McCULLY GYRATORY CRUSHER

In first letter please state conditions, location, serial number and price.

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FOR SALE

Jaeger, 4½ cu. yd. Truckmixer, powered by Hercules Motor.

Chicago Pneumatic 14 x 12 compressor.

Ingersoll Rand, 12 x 10 compressor.
2 Ingersoll Rand Compressors, 354 cu. yd. direct driven air diesel.

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WANTED

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L.B.SMITH INC. OFFERS

AIR COMPRESSORS

Ingersoll-Rand 105 cubic foot on 2 pneumatics. Good condition.

Schramm 105 cu. ft. gas powered compressor on 4 steel wheels.

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Worthington 210 cubic foot, two-stage air-cooled, on skid base with Hercules diesel.

Pennsylvania 12" x 10" class 3A single cylinder. 355 cubic foot P.D., flat belt driven. 50 HP slip ring motor.

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.

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Universal truck crane.

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Sanderson-Cyclone #42 well drill, new.

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1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

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Cedarapids 2036 AAA unit with feeder, etc.
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10 x 7 Allis Chalmers Blake type jaw crusher.
Cedarapids No. 1 Kubit
60 ton 2 compartment storage bin with clam shell gates.
4' x 12' Tyler Niagara type 600, 3 deck.
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½-yd. to 2-yd. clamshell buckets.
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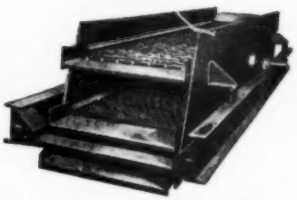

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Special, — 3 yd. Dumperete bodies practically new, reasonably priced.

P&H ⅛ yd. crane
Hanson truck crane
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RD-7 with bulldozer
Gallon motor grader
Pioneer 10x36 roller bearing crusher
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Silent Hoist Krane Krawler
Kohler 1.5 KVA light plant
Eagle cinder crusher
Day #5 hammermill
Climax TU motor
2000# front ball
Erie 8" sand pump

These machines reconditioned in our newly-built daylight plant. Come see them!

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MARION #92 M. Ser. #8508, 3 cu. yd. shovel-dragline. New 1948. D-17000 Cat. Diesel. Rebuilt at cost of $33,000.00. Cleaned, repainted. Looks, runs like new. $37,000.00. Ohio.

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UNIVERSAL, Primary Portable, #2036 RB. Jaw, Apron Feeder, 27' x 30" undercrusher conveyor. D-8500 Cat. Diesel. Late model. Pneumatic tired. Air Brakes. Enrolled. $15,000.00. Can also furnish complete secondary — either Hammermill or Double Roll. Universal or Iowa.

UNIVERSAL Portable Screening Plant, complete with 5' x 14' triple deck Simplicity screen, 30" x 46' field loading conveyor, 36" x 30' delivery conveyor, two 6' x 24' side delivery conveyors. On tandem axles with 8.25 x 20 tires, mechanical brakes, complete with electric motors & drives. $6500.00.

ROGERS, brand new, latest model 21" x 40" RB. Jaw Crusher. Weight 29,500 lb. Long jaws. $9250.00. Can furnish 10 ft. x 40" Apron Feeder, and portable mounting.

IOWA 25" x 40" RB. Jaw Crusher. A1. Extras. $10,750.00.

ROGERS 18" x 24" RB. Jaw with apron feeder. A1. $3500.00.

LINK-BELT 40" Apron Feeder, 10 ft. long, complete with clutch, drives, side hopper. Like new. $2500.00.

FARREL-BACON 48" x 36" RB. Jaw. Good. $19,500.00 loaded.

IOWA #4033 Hammermill. Factory rebuilt. Guaranteed. $2500.00.

NEW JAW DIES for 20" x 36" RB, Iowa. Complete Set. $375.00.

GRUENDLER 3XB. Hammermill. Good. $850.00.

UNIVERSAL #3. Hammermill. Extras. $600.00.

GILSON #22. Hammermill. A1. $700.00.

NEW HOLLAND 30 x 30 Impact Crusher. $6500.00.

IOWA 30" x 18" RB. Double Roll. A1. $2000.00.

UNIVERSAL 40" x 22" RB. Double Roll with 75 H.P. Electric Motor. Latest model. Used little. $4250.00.

ALLIS-CHALMER 30" Superior McCully Gyr. Crusher. V-belt to 200 H.P. Electric Motor. Guaranteed good as new. $21,000.00.

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A-C. Aero-Vibrator. 3' x 6'. 2-deck. Enclosed. New. $750.00.

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MURPHY DIESEL #ME. 66. Power Unit. Practically new. Bargain. $3600.00. Rental purchase.

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Worzel Machinery Rental & Sales Company
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Telephone Harrison 0021

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1 Schaeffer Hydrator with Raymond #3 Hammermills, mechanical separators, flotation system, complete
1 Wellman LF 10, gas producer with coal bin, piping for kilns
1 40 ft. boom for Marion shovel
1 Hendrix dragline bucket, wet type, 1 yard
1 6 ton Vulcan locomotive 36 gauge
12 steel quarry cars 36 gauge
1 Jaw crusher Cedar Rapids 10 x 20
1 Day pulverizer
1 #2 Williams mill
Screens, conveyors, etc.

Post Office Box 10
Sherwood, Tennessee

FOR SALE

APRON CONVEYOR, 30" x 47', complete with chains, sprockets, rollers, rails, gear reducer and motor.

BUCKET CHAIN ELEVATOR, Link-Belt, 28' centers, buckets 18" x 9½", double chain; casing 44" x 54".

BELT CONVEYOR, 18" x 21'—4" centers, complete with troughing rolls and return idlers, frame, motor & drive.

LINK-BELT, 20" x 20" SINGLE ROLL CRUSHER.

STACK,—41" dia. x 60' x ¼" plate in 2 sections. Like new.

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Parts for several Fairbanks motor truck scales type S, 10 ton capacity including good underframes and large dials.

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1—Cedar Rapids Hammermill, size #4033, serial #8148, manufactured by the Iowa Manufacturing Company. This is a 50 TPH machine and in practically new condition. Weighs six ton.

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ELLICOTT SQUARE, BUFFALO 3, N. Y.

1—25 x 40 Acme Jaw Crusher
1—14 x 26 Acme Jaw Crusher
1—10" B Telsmith Gyratory Crusher
1—18" Intercone Crusher
1—18" x 36 Farrel Jaw Crusher
1—42" x 10' x 2 Deck Screen
1—24" Telsmith Gyrasphere Crusher
1—25" x 40" Cedar Rapids Jaw Crusher
1—48" Telsmith Gyrasphere Crusher
1—4¼ Symons Cone Crusher
1—24 x 36" type B Farrel Jaw Crusher with V Belt Drive 100 HP Motor & Feeder
1—150 HP Motor, Used, Slip Ring, 60 cycles
1—200 HP Motor, Used, Slip Ring, 60 cycles
1—350 HP Motor, Used, Squarrel Cage, 25 cycles
1—¾ yd. Marion Diesel Shovel & Crane

BLUE BALL MACHINE WORKS
Blue Ball, Pennsylvania

FOR SALE

16 ft. Sturtevant Air-Separator—with 75 HP Motor; V Belt Drive.

40 x 33 Cedar Rapids Hammer Mill—with 300 HP Motor, V Belt Drive and starting equipment.

30 x 15 Pioneer Roll Crusher.
Above equipment in excellent condition; only used short time.

40 x 22 Pioneer Roll Crusher—Will need new roll shells in short time.

30-40 American Hammer Mill—Cheek plates need replacing. Also have spare hammers & grate bars for hammer mill.

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One Cat. D-8800 Diesel Electric Set—50 KW—3 phase, 60 cycle, 220 volt. Good running condition—$2500.00.

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Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully Guaranteed. Send us your inquiries.

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Rex "27E" Paver. Big drum, ready to pave
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Pioneer 412VW & 54VA Gravel Plants
CRUSHERS: 10x20 Univ. 10x40 Good Roads, 12x16 blake type, 15x36 Pioneer, 20x36 Eagle, 24x36 Kennedy 30x36 Traylor, 48x36 Nordberg, 60x48 Allis C JAW, 322R Allis C, 7' Newhouse, 30" McCully GYR. 2, 3 & 5½' Symons, 24x21 McLanahan 96CL ROLL.
2 Raymond 5 roll high side mills.
Belt Conveyors: 18" x 122', 24" x 56', 18" x 90' 8, 10 x 12" Dredge.
Diamond Core & Blast Hole DRILLS
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SCREEN 4 x 12' Triple Deck Vibratory. New in 1948.

JAW CRUSHER 15 x 40" Roller Bearing in excellent condition.

BOOMS for 80D Northwest. One crane boom 65', and one 75' Dragline Boom with 2½ yd. bucket.

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16—8,000 & 10,000 GAL. CAP. R.R. TANK CAR TANKS—WITH OR WITHOUT COILS.

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IMMEDIATE DELIVERY

Universal Roll Crusher
24" x 16" Complete with
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In good condition. $2400.00.

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1—New Unit #1020 combination crane, backhoe, and dragline
1—3 yd. dumpcrete on 1951 2 ton Studebaker
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1—1950 Studebaker 2 ton flat bed with hoist
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TWISTED STEEL 1-1/4" to 3" DIAMETERS

SPIRAL WELD TUBULAR 1-1/2" to 54" DIAMETERS

Shanks and Sockets to meet your specifications

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1 Yd.—Stationary Drum Concrete Mixer. Good condition.
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One pair—D8 Cat Track Rails. Excellent condition.

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A BARGAIN

80 B Bucyrus electric 440 Volt shovel, 2½ yard capacity, 48' boom, 32' dipper sticks. Ohio location.

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1—1¼ yd. Sauerman slackline, complete. This outfit consists of bucket, hoist, 100' mast, roller bearing blocks and carriage, trackline and guys.

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1—Sturtevant No1 Ring Roll Mill
1—Murphy Diesel Power Unit, ME-46 one year old
1—3XB Gruendler Hammermill, with V-Belt Drive to above Power Unit.

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MOTORS, GENERATORS, TRANSFORMERS
1 — 1500 H.P.
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New and Rebuilt
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CASH FOR YOUR SURPLUS

2—N. W. Model 6 Shovels—Link Belt No. 570 44 B others.

8—5TD Rad Dump Euclids—8—7TD Rad Dump Euclids—5—33FD—Rad Dump Euclids—16—15 yd. bottom Dumps—9—25 Yd. Euclid Bottom Dump Trucks—13—35 Yd. Bottom Dump Euclids without Tractors.

Jaw Crushers—48"x48"—42"x49"—42"x36"—24"x36"—18"x36"—36"x15"—36"x12" — 40"x16" — Symons Cone 5¼'-4'-3'-2'-50240 Dixie Hammer Mill—14' Newhouse Grr. 4' TT Traylor—16" McCully—48" Gyrosphere—19" McCully.

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BYERS TRUCK MOUNTED
Crane - Shovel - Back Hoe

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1949 Browning Truck crane, 105' boom, 15' jib.
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1948 Insley K-12 Pullshovel.
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FOR SALE

Model L.S. 85 Diesel Powered Link Belt Speeder Crane—in excellent condition. This machine is equipped as a combination shovel, crane, or dragline. Complete with shovel attachment, dragline attachment, ¾ cu. yd. shovel bucket, ¾ cu. yd. dragline bucket, and 50' boom. New 10/30/46.

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(120) 300 Amp. Gasoline & Electric Driven Welding Machines, portable & stationary

(2) 315 Cu. Ft. Gasoline Driven Air Compressors, mounted on Pneumatic Tired Trailers

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9—Elec. Shovels, 17, 10, 6, 4, 3 & 1 Yd.
4—Walker Draglines, 3-6-9-10 Yd.
3—35 & 40 Ton 130 Ft. Boom Whirleys.
7—Lorain, Crane 20, 15, 30 & 40 Ton Diesel & Steam.
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6—10 ton Phoenix Quarry cars-std. ga.

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5'x22', 6'x22', 6'x48', 8'x22', 8'x36" & 10'x36"
Hardinge Conical Ball Mills.
3'x3', 4'x3', 4'x4', 5'x4', 6'x4', 6'x6' & 7'x8'
Cylindrical Ball Mills, Marcy, Allis Chalmers, etc.
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Bradley Hercules Junior.
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Loomis 44, Keystone 51 & 71
10—IR—F42—Wagon Drills

JAW CRUSHERS

Blake Type—9x15, 10x20, 12x24, 13x24, 13x30, 18x30, 18x36, 24x36, 30x42, 40x48, 60x48, 84x60, 42x48 & 28x36
Single Shaft Type—9x16, 10x16, 11x18, 8x36, 10x30, 15x24, 15x30, 10x36, 15x36, 18x36, 20x36, 24x36, 10x40, 30x42
Cam & Roller Type—8x10, 8x20, 10x16, 10x20, 10x26, 11x18, 13x18, 13x22, 13x24, 13x26, 11x34, 11x36, 13x34, 14x26, 14x36, 18x36, 18x42, 9x40, 24x40, 22x50

REDUCTION TYPE CONE CRUSHERS

Allis Chalmers 3228 Newhouse 5', 7' & 10'
Symons 2', 3', 4' 6½' Short Head Tels. Gyro 24", 36" & 4' Short Head
Traylor 1'8", 2'4" TT No. 12 22, 36", 48" TH
Kennedy 10-S, 25-S, 27-S, 40-S

PRIMARY TYPE GYRATORY CRUSHERS

Allis Chalmers K&N No. 3, 4, 5, 6, 7½, 8, 9, 13
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Traylor Bulldog 12", 14", 16", 20", Tels. 10B, 18B

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GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

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15—8000, 10000 and 20000 gal. cap. with coils.

RAILROAD CARS

100—8000 & 10,000 gal. cap. Tank Cars.
100—50 Ton & 70 Ton Battleship Gondolas.
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10—Side Dump converted, 70 ton Hopper Cars.

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JEFFREY 24 x 16 A, 36 x 24 & 36 x 42 B
WILLIAMS No. 15 SLUGGER & 60 GA.
GRUENDLER 2-XB — 5-XB & 6-XC
DIXIE—5040 MODEL 2424, 3630 & 3650 PREMIER
PENNSYLVANIA CA-3-SR Impactor and SXT-11 & 13

ROTARY DRYERS — KILNS

60"x35' & 70"x45' Ruggles Coles XB Indirect.
Double Shells 48"x80', 96"x70'
Direct Heat: 4'x20', 4'x40', 4½'x40', 5'x24', 5'x30', 5'x50', 6'x35', 6'x40', 6'x60' & 7'x60'
Kilns: 6'x45', 6'x60', 8'x50' & 9'x170'

CONVEYOR BELTS

6600 Ft. 36, 42, 48 & 60 In. Wide

SCREENS

VIBRATING: 3x6, 3x8, 3x5, 4x5, 4x8, 4x10, 4x12.
HUMMER, NIAGARA & ROBINS, LINK BELT.

DIESEL GENERATORS

4—100 KW D.M. 3 60/220/440 V.
3—60 KW International 3/60/220 V.
2—50 KW Superior 3/60/220 V.
3—74 KW Caterpillar 3/60/220/440 V.
1—190 KVA Baldwin DeLavergne 3/60/440 V.
1—New 500 KW American 3/60/480 V.
1—300 KW Chgo. Pneu. 3/60/2300 V.
1—300 KW F.M. 3/60/2400 V.
1—432 KVA Worthington 3/60/2300 V.
6—230 Volt Direct Current 50 to 800 KW
1250 KVA Westberg 3/60/2300 V.
1—600 KW Gen. Motors 2300V.
2—600 KW Ingersoll Rand 2400V.

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N.Y.

1—10 Ton Std. Ga. Diesel Loco.
6—13TD Euclid Rear Dump 22 Ton—1948
1—Lorain MC 414 Truck Crane—1946
1—TC70 Link Belt Truck Crane 40' B.
1—¾ Lorain 41 Comb. S&D 1948
2—2½ and 80D NW Shovels
2—10 Ton steel Stiff Leg Derricks
1—6 Ton Huber 3W Roller
1—45' Crane Boom for Link Belt LS90
1—D8 Bulldozer 2U Series
1—801 Koehring Shovel & Crane
1—40 Ton Industrial Oil Fired Loco. Crane—1943

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HERE'S A PARTIAL LISTINGS OF OUR GIANT STOCK THAT COVERS UNITS OF EVERY SIZE AND DESCRIPTION

DIESEL-GENERATORS (2)
NEW — 31.25 KVA Rogers AC Generators, 3/60/120/208, d/c Exciter. Driven by direct-connected Cumins Diesel Engine. Model H-I — Complete Control Panel—NEW

HI-PRESSURE PUMPS

GPM	MAKE	TYPE	HEAD
600	Worth	6DS	925 ft.
500	Manistee	H	250 ft.
300	Al. Ch.	NMZ	800 ft.

AC SYNCHRO. GENERATORS
3 Phase 60 Cycle, 220 or 440 Volts (*2200 volts or higher)

KVA	MAKE	TYPE	P.F.	Spd.
1500	G.E.	ATI	.8	900
1000	*Westgh	203-D	.8	900
250	*Al-Ch (New)		.8	720
150	El. Machy	EM	.8	720
112.5	*G.E.	ATB	.8	1200
110	Cr-Wh	103	.8	900
100	*G.E.	ATB	.8	900
60	Fr-Morse	B	.8	900
55	G.E.	ATB	.8	1200
50	G.E.	ATB	.8	1200
50	Westgh			
50	Cr-Wh	5086	.8	1200
37.5	Al-Ch	EA121	.8	1800

SQUIRREL CAGE MOTORS
3 Phase, 60 Cycle, 220 or 440 Volts (*2200 Volts or Higher)

H.P.	MAKE	TYPE	SPEED
1000	*G.E. (New)	K6347S	1800
750	*G.E.	KT	720
500	*G.E.	PBG	1800
500	*Fr.-Morse	HS	1760
450	*G.E.	KF-567S	1200
400	*Cont. (New)	NZ	1800
400	*A.C.	ARWW	900
300	*Westgh.	CS	3600
300	G.E.	IE-K	1200
300	A.C.	AR	900
300	Westgh.	CS	514
300	West. (New)	CS	1800
250	*L.Allis	GGX-1485	720
250	Westgh.	CS	600
200	*G.E.	IK-13B	1800
150	G.E.	KT-546	1800
150	G.E.	KTF	1200
150	Westgh.	CS850A	600
125	West. (New)	CS504	3600
125	*A.C.	AR226	1800
125	G.E.	K6326B (tefc)	1200
125	G.E. (New)	K6333	900
100	A.C. (New)	ARWWT	3600
100	*G.E.	FT542Z	1800
100	G.E.	FTRP	1800

Hundreds of smaller motors!

MOTOR-GENERATOR SETS

K.W.	MAKE	A.C.	D.C.
500	Westgh.	2300	250
500	Westgh.	550	250
500	Cr-Wh	220/440	250
450	G.E.	2300	125/250
400	Westgh.	2300	600
250	West-GE	440	250
200	Cr-Wh	440	250
200	Ridgeway	2200	250
150	G.E.	2300/440	250
150	G.E.	440	250/275
150	Cr-Wh	440	220
150	Al-Ch	220	125
100	G.E.	440	250
100	G.E.	220	250
100	G.E.-Delco	440	120/240
75	Al-Ch	440	250
75	Westgh	2300	110
60	Al-Ch	2300	110
40	Cr-Wh	220	125
40	El-P-GE	440	250
40	Al-Ch	440	250
30	Cr-Wh	220	125
25	G.E.	440	250
20	G.E.	440	250
10	G.E.	440	250
10	Cr.-Wh	220	125
10	G.E.	440	250

D.C. TO A.C.

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Building your trailer fleet with LANDIS TRAILERS is good sense. You are sure of the strength, durability and fast operation you want and need in on-and-off-the-road jobs. Many new developments are in the LANDIS TRAILER: All-weld construction, modern safety controls on side, end or bottom dumps work smoothly, quickly. You, too, can count on LANDIS! Write today to:

LANDIS STEEL CO.

P. O. Box 248 PICHER, OKLAHOMA Tel. 724

CRUSHING FACTS

Modern Kue-Ken Crusher Pays for Itself*

Yes! This is true. If your present crusher wears out a set of jaw plates in 30 days or less replace now with a Kue-Ken Crusher.

Savings in jaw plate replacement will pay for your new Kue-Ken.

Only Kue-Ken Crushes Without Rubbing

That is why jaw plates last 5-10 times longer. It is the only new crushing principle to be successfully engineered in over 90 years of crusher design. Ask any Kue-Ken owner.

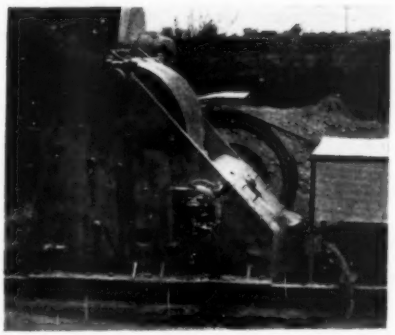
The Hinge Pin is on the center line of the crushing zone. This makes the path of travel of the swing jaw normal to both jaw faces. There is practically no upward movement, so rocks are "crushed without rubbing." Wear on jaw plates is reduced . . . wasted power to lift the "live" load is saved.

Capacity is increased 25-50% because normal Kue-Ken crushing speed is 375 strokes per minute. High speed makes a finer, more uniform product with less "flats" . . . easier to meet state specifications.

Cost of Jaw Plate Replacement Will Pay for Kue-Ken

A California plant crushing hard river gravel wears out a set of plates every 30 days on his old style overhead eccentric type crusher. A neighbor using Kue-Ken Crushers on the same type gravel reports 32 months on one set of jaw plates. Jaw plate replacement savings have paid for his Kue-Ken.

Check your plate replacement costs today. The faster they wear out the more you can save with Kue-Ken.



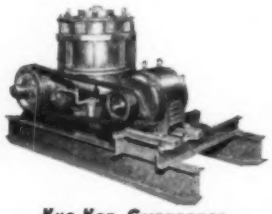
10 TIMES LONGER JAW PLATE LIFE!

This Kue-Ken Crusher has run 32 months with the original jaw plates still in use on hard river gravel

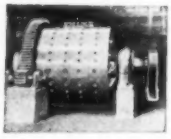
Get Complete Facts — Write for Bulletins

YOUR NEAREST WESTERN DEALER

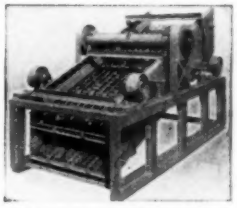
CALIFORNIA: (Southern)—Miguia & Co., Pasadena. TEXAS: Closner Equipment Co., San Antonio. UTAH: Lund Machinery Co., Salt Lake City. WASHINGTON: Seattle—Washington Machinery and Storage Co.; Spokane—Construction Equipment Co. OREGON: Portland—Edward L. Kropp Co., Medford Cal-Ore Machinery Co. MEXICO: Anahuac Machinery Co. S. A.



Kue-Ken Gyracones



Rib-Cone Ball Mills



Overstrom Screens

*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

451 CHESTNUT ST. • OAKLAND 20, CALIFORNIA

STRAUB MFG. CO.

Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
Kue-Ken Simplex Crushers	Concentrating Tables	Feeders
Kue-Ken Gyratory Crushers	Overhead Eccentric Crushers	Screenwheel Classifiers

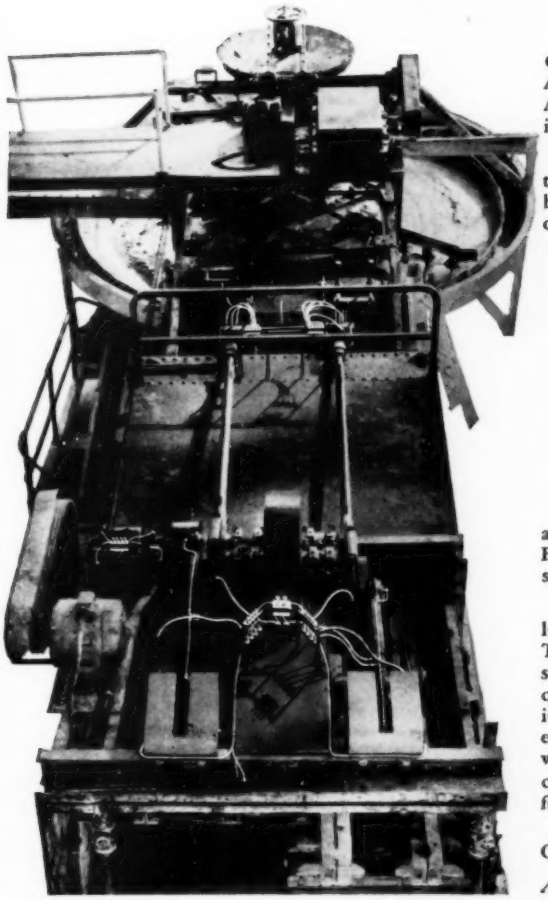
Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor Broad and Arch Streets, Philadelphia, Pennsylvania.

Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.

FARVAL—*Studies in Centralized Lubrication* No. 124

IN SOUTH AFRICA

Farval speeds gold production, saving lubricants, labor and bearing expense



Farval installation on a Dorr Bowl Classifier at the Venterspost Gold Mining Co., Ltd., Witwatersrand, Transvaal. Note the unusual method of mounting the 4 groups of valve blocks on special frames above the machinery.

● Pressed for more production, equipment at South African gold mines is operated around the clock. Any shutdown, as for lubrication or bearing repair, interferes seriously with gold output.

This need for uninterrupted operation led to a trial installation of Farval Centralized Lubrication by one company on a Dorr Classifier. Benefits were obvious immediately:

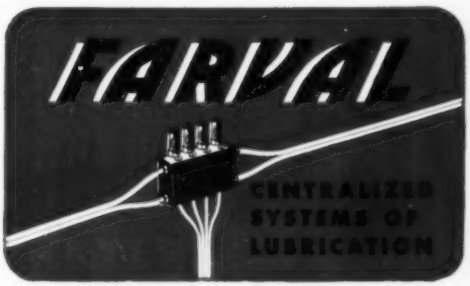
1. It is no longer necessary to shut down equipment to lubricate it.
2. Certain difficulties in gold extraction, formerly caused by presence of surplus grease are eliminated.
3. Dust containing cyanide is kept out of the bearings, thus reducing wear and saving repairs.
4. Lubricating labor is saved.
5. Waste is eliminated, with a consequent saving in grease of approximately 80%. This saving alone pays for the installation of Farval.

Results have been so amazing that, one after another, gold mining companies have tried out Farval Centralized Lubrication and then installed systems widely throughout their plants.

Farval is the original Dualine system of centralized lubrication, proved practical in 20 years of service. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Through its full hydraulic operation, Farval unfailingly delivers grease or oil to each bearing—as much as you want, exactly measured—as often as desired. Indicators at every bearing show that each valve has functioned.

Write for Bulletin 25 for full details. The Farval Corporation, 3280 East 80th Street, Cleveland 4, O.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



EFFICIENCY UP...

Photo Courtesy Schramm, Inc.

COSTS DOWN

...when you use Texaco air compressor oil

EFFICIENT, economical air compressor operating requires an oil that is *exactly right* for your particular operating conditions. To meet this requirement you have only to use the recommended Texaco air compressor oil. A Texaco Lubrication Engineer will gladly help you.

—Under normal conditions, a Texaco *straight mineral* air compressor oil will assure clean operation, minimum wear, lower maintenance costs.

—Under conditions causing rust in cylinders, coolers, lines and receivers, a Texaco *rust-inhibited* air compressor oil will keep compressors and systems rust-free whether running or not.

—Where service conditions are extremely severe, a Texaco *heavy-duty* air compressor oil will prevent harmful formations of carbon and sludge.

—To combat excessive wear under "wet cylinder" conditions, a Texaco *compounded* air compressor oil will keep wear at a minimum.

Call in a Texaco Lubrication Engineer. Let him tell you about the Texaco Simplified Lubrication Plan that will let you handle *all* your major lubrication with *only six* Texaco Lubricants. A time-saving, cost-saving set-up. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LONGER DRILL LIFE, more footage drilled, lower costs — count on these benefits when you use *Texaco Rock Drill Lubricant EP.* This series of "extreme pressure" lubricants give full protection against wear, guard against rust whether drills are running or idle.

TEXACO

TEXACO Lubricants and Fuels

TUNE IN . . . TEXACO STAR THEATER starring **MILTON BERLE** on television every Tuesday night. **METROPOLITAN OPERA** broadcasts every **Saturday afternoon.**